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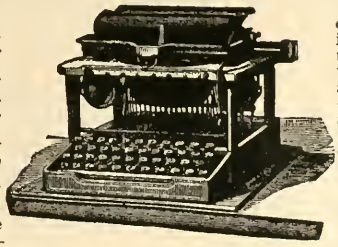

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The effect is almost immediate in all cases of Headache, from whatever cause it may arise; but it is more especially beneficial in those produced by over excitement to the nervous system.

The usual mode of administration has been in powder; but the Elixir will be found not only more agreeable, but much more efficacious.

Each fluid ounce contains eighty grains Guarana.

FOR HEADACHE,--dose, a tablespoonful for an adult, to be repeated in an hour, if the first dose does not give relief.

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NOTE.--There are many Elixirs of Guarana manufactured of much less strength than that prepared by us. If Physicians will specify our preparation they can rest satisfied they will not be disappointed in the effects we claim.

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Are the Natural Medicinal Properties of the Wonderful "Seven Mineral Springs" in Washington County, Virginia.

This celebrated IRON AND ALUM MASS is not only indorsed by the best Medical talent of its native State, but is extensively prescribed by every physician in Virginia, and in every other State where a knowledge of its therapeutic value has been acquired.

The following brief extracts will convey some idea to the practitioner of its importance as a remedial agent:

In the treatment of DYSPEPSIA, CHLOROSIS, ANÆMIA, NERVOUS and MUSCULAR DEBILITY, NERVOUS and SICK HEADACHE, DYSMENORRHŒA, MENORRHAGIA, AMENORRHŒA, diseases of the Kidneys and Bladder, and such like organic or functional disturbances, I know of no remedy upon which I can rely with more certainly satisfactory results than the "Seven Springs Mass."
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I have found no single remedy to yield such satisfactory results as the "Seven Springs Mass," in the treatment of DYSPEPSIA, CHRONIC DIARRHŒA, ANÆMIA, CHLOROSIS, and for CHRONIC ECZEMA I find it *invaluable*, associated with appropriate topical treatment.
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From my experience with the "Iron and Alum Mass," I believe it will prove the best medicine we have in use for chronic diseases. G. M. D. PATTERSON, M. D., Englewood, Tex.

For DYSPEPSIA, ULCERATION of the THROAT, INFLAMMATION of the NECK of the BLADDER, LEUCORRHŒA, etc., the "Seven Springs Mass" seems to act with almost specific effect.
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Have been using the "Iron and Alum" in my practice for the last ten months with marked success in many cases. JOHN HUGHSON, M. D., Sumpter, S. C.

I am fully convinced from personal observation of the great therapeutic value of the "Seven Springs Mass" in the treatment of female complaints.
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For all diseases dependent upon deranged conditions of the secretions of the Liver and Kidney the "Seven Springs Mass" is most excellent. DR. CYRUS SOGGETT, Fincastle, Va.

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F. O. MORRIS, M. D., Eagle Lake, Tex.

Chills and Fevers yield readily to the "Iron and Alum Mass" treatment. Know of a number of cases cured by its use. WM. WHITE, M. D., Abingdon, Va.
M. N. HEISKELL, M. D., Abingdon, Va.

Many other testimonials could be added, had we the space, our object being to give such evidence of its claims as would fairly represent its character and indicate its appreciation. If we have succeeded in this, every physician will at once see the importance of such a remedy in his practice.

Most of the leading wholesale Druggists and many of the retail Drug Stores are now selling this "Mass" in the different cities and towns. But when it cannot be conveniently obtained from the Druggists, it can always be procured from us. Price $1.00 per package, with a liberal discount to physicians, when ordered in one-half dozen or more lots. We send by mail, postage paid, at our risk. No discount on orders for less than one-half dozen; on such, a deduction of 25 per cent will be allowed physicians, when accompanied with the cash. We make good any package lost through the mail, if reported within 20 days from date of mailing.

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☞ *Always mention "Seven Springs Mass."* **Abingdon, Virginia.**

CHEMICAL REPORTS ON MALTINE.

By R. Ogden Doremus, M. D. LL.D.

PROFESSOR OF CHEMISTRY AND TOXICOLOGY, BELLEVUE HOSPITAL MEDICAL COLLEGE;
PROFESSOR OF CHEMISTRY AND PHYSICS, COLLEGE OF THE CITY OF NEW YORK.

New York, April 17th, 1879.

I have visited the works at Creskill, on the Hudson, where Maltine is prepared, and spent portions of two days in witnessing the chemical processes for making the same. I was particularly impressed with the thorough cleanliness observed, as well as with the completeness of the aparatus employed for accomplishing the desired result—from the first treatment of the grains, to the concentration of the liquid product by evaporation *in vacuo*. The operation is effective in extracting the whole of the nutritive constituents of the grains of malted Barley, Wheat and Oats, with but a slight residue, and the most complete method yet devised, with which I am acquainted, for accomplishing this object.

Maltine is superior in therapeutic and nutritive value to any Extract of Malt made from Barley alone, or to any other preparation of any variety of grain. From a chemical and medical standpoint, I cannot commend too highly to my professional brethren this unique and compact variety of vegetable diet and remedial agent, nutritive to every tissue of the body, from bone to brain.

Respectfully, R. OGDEN DOREMUS.

By Prof. John Attfield, F.C.S.

PROFESSOR OF PRACTICAL CHEMISTRY TO THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN;
AUTHOR OF A MANUAL OF GENERAL MEDICAL AND PHARMACEUTICAL CHEMISTRY.

London, 17 Bloomsbury Square, W. C.

To Messrs. Reed & Carnrick: October 28th, 1878.

Gentlemen:—I have analysed the extract of malted Wheat, malted Oats and malted Barley, which you term Maltine. I have also prepared, myself, some extract from these three malted cereals, and have similarly analysed it, and may state at once that it corresponds in every respect with the Maltine made by myself. As regards the various Malt Extracts in the market, I may remark that your Maltine belongs to the non-alcoholic class, and is far richer, not only in the directly nutritious materials, but in the farina digesting Diastase. In comparison, your Maltine is about ten times as valuable, as a flesh former; from five to ten times as valuable, as a heat producer; and at least five times as valuable as a starch digesting agent. It contains, unimpaired and in a highly concentrated form, the whole of the valuable materials which it is possible to extract from either malted Wheat, malted Oats or malted Barley. Yours Faithfully, JOHN ATTFIELD.

LIST OF MALTINE PREPARATIONS.

MALTINE—Plain.
MALTINE with Alteratives.
MALTINE with Beef and Iron.
MALTINE with Cod Liver Oil and Pancreatine.
MALTINE with Cod Liver Oil and Phosphates.
MALTINE with Hops.
MALTINE with Hypophosphites.
MALTINE with Pepsin and Pancreatine.
MALTINE with Phosphates.
MALTINE with Phos. Iron, Quinia and Strychnia.
MALTINE Ferrated.
MALTINE WINE.
MALTINE WINE with Pepsin and Pancreatine.
MALTO-YERBINE.

Maltine is now in the hands of the Wholesale Trade throughout the United States.

We guarantee that Maltine will keep perfectly in any climate, or any season of the year. Faithfully Yours,

REED & CARNRICK, New York.

PROFESSIONAL OPINIONS ON MALTINE.

During the past year we have received nearly one thousand letters from the Medical Profession in this country and Great Britain, referring to the therapeutic value of MALTINE: *their character is indicated by several extracts which we present below.*

BALTIMORE, MD., Jan. 20th, 1879.

We have realized decided benefit in a large number of cases treated in the City Hospital and at the Dispensary connected with it, from your preparations of Maltine. Many persons will welcome them as most efficacious and palatable substitutes for Cod Liver Oil, and as covering a wider range of application.

S. WESLEY CHAMBERS, M. D., *Res. Phys. City Hospital.*

BALTIMORE, MD., Jan. 20th, 1879.

We take pleasure in saying in behalf of your preparations of Maltine, that they have fully come up to the measure of your representations. They have given us the greatest satisfaction. We have used them extensively to the great benefit of our patients. DAVID STREET, M. D., *Res. Phys., Maternite Hospital.*

LOUISVILLE, KY., July 11th, 1879.

I am using Maltine with Pepsin and Pencreatine in my family, and am exceedingly pleased with its results. Professor Flint, of your city, whom I highly esteem, has been consulted about the case and knows the solicitude I have had about it. The above preparation in Sherry, after meals, has been productive of great benefit. I am using it in the City Marine Hospital, the Kentucky Infirmary for Women and Children, and in my private practice, and am much pleased with the results obtained.

T. P. SATTERWHITE, M. D.

JACKSON, MICH., October, 1878.

In its superiority to the Extract of Malt prepared from Barley alone, I consider Maltine to be all that is claimed for it, and prize it as a very valuable addition to the list of tonic and nutritive agents. C. H. LEWIS, M. D.

ST. CHARLES, MINN., March 23d, 1879.

In conditions of Anæmia, in convalescence from severe and protracted disease, especially in chronic cases where there is great general debility, and in the enfeebled conditions of aged persons, I have learned to rely on Maltine, nor in any instance have I been disappointed of good results, therein forming *a marked contrast, so far as my experience goes, to preparations of Malt, which I had used previously and had abandoned the use of them when my attention was called to Maltine.*

C. R. J. KELLAM, M. D.

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26 WEYMOUTH ST., Portland Place, LONDON.
May 30th, 1879.

I am ordering your Maltine very largely.

LENNOX BROWN, F. R. C. S., *Sen. Surg., Centl. Throat and Ear Hosp., etc.*

---

75 Lever St., Piccadilly, MANCHESTER, Jan. 16th, 1879.

I have used your Maltine pretty extensively since its introduction, and have found it exceedingly useful; particularly in cases where Cod Liver Oil has not agreed, have I found the Maltine with Beef and Iron most valuable.

J. SHEPHERD FLETCHER, M. D., M. R. C. S.

Edde Cross House, Ross, March 8th, 1879.

I am very pleased to bear testimony to the great value of Maltine. I prescribe it extensively and with the best results, specially in anæmic conditions of the system with much stomach irritability, which it seems to allay very speedily.

J. W. NORMAN, M. B., M. R. C. S.

"Malt Extract has almost entirely taken the place of Cod Liver Oil in the treatment of Phthisis, and other wasting diseases, at the Balse Hospital."—*Ziemssen's Cyclopedia, Vol. XVI, p. 474.*

TROMMER EXTRACT OF MALT.

OPINIONS OF THE MEDICAL PROFESSION.

"A very efficient preparation, which deserves the favorable consideration of rational physicians."—L. P. SHUCKING, M. D., Washington, D. C.

"Have secured much benefit in cases of general depreciation of the system accompanying ovarian disease."—P. ADOLPHUS, M. D., Chicago.

"Have been using your Extract of Malt with results so satisfactory that in making them known I feel I do the profession a service."—D. NORTON, M. D., Louisville.

"Have used Tromer's Extract of Malt in weak digestion, debility, and in chest cases (combined with cod liver oil), and have uniformly found it particularly valuable."—C. S. PARKE, M. D., Quebec.

"I look upon this remedy as the most valuable aid we possess in all cases where debility, impaired digestion and malnutrition obtain."—J. B. MCCONNELL, M. D., Prof. Chemistry, etc., Univ. Bishop's Coll. Montreal.

"As Superintendent of the Public Lying-in-Hospital wards of the Woman's Hospital, I have had excellent opportunity of testing the Trommer preparations. * * * A large number of our patients were in a very debilitated condition, and after confinement required special treatment. These preparations, more especially that with cod liver oil, were found of the greatest benefit. Their restorative power was very marked, patients regaining strength, and a healthy state of blood, much more rapidly than had previously been observed."—R. A. KENNEDY, M. A., M. D., Prof. Midwifery and Diseases of women, etc., Univ. Bishop's Coll., Montreal.

"I have tried Trommer's Extract of Malt, and can recommend it as the best I have ever used."—H. LOEWENSTEIN, M. D., Brooklyn, N. Y.

"Have used all your preparations, and am convinced they have performed wonders in my hands."—W. G. AUSTIN, M. D., New Orleans.

"The more I give Trommer Malt Extract the better I am pleased with its therapeutic action in certain of the most common chronic maladies."—E. R. PALMER, Prof. Phisiology, etc., Univ. of Louisville, Louisville, Ky

"In functional derangement of the stomach and bowels the combination of Extract of Malt with Pepsin is most valuable; and in the emaciation following the summer diarrhœa of children it supplies a physiological medicine of extraordinary restorative power."—J. A. GRANT, M. D., M. R. C. P., London, Eng.

"I have given these preparations to over three hundred patients during the past year, and have yet to see a single case in which benefit has not accrued from their use. It may be said that the medicines contained in some of the preparations should have the credit, but I have been careful to use such preparations in cases where the medicinal agents therein contained have before been given with little or no advantage. In tuberculosis and scrofulosis I have found Malt Extract to improve nutrition and arrest the progress of the disease, acting similarly to cod liver oil, save that its effects are more decided."—JOHN A. LARRABEE, Prof. of Materia Medica and Therapeutics, etc., Hospital College of Medicine, Louisville, Ky.

The Trommer Extract of Malt Company guarantee to the Medical Profession the excellent quality and absolute reliability of their Extract of Malt and all its combinations. Their Extract is prepared by an IMPROVED PROCESS, which prevents injury to its properties or flavor. We can positively assure the Profession that it will keep for years in any climate without fermenting or moulding, and that the flavor actually improves by age.

THE

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Original Contributions.

ARTICLE I.

CHRONIC INFLAMMATION OF THE LARYNX.* By THOS. F. RUMBOLD, M. D., of St. Louis, Mo.

The prominent symptom of this complaint, that is usually given by patients, is that of tickling in the neighborhood of the vocal cords, soon followed by a sensation of an adhering tenacious secretion.

After a time, hoarseness supervenes, then the discharge becomes more copious. If the the patient has been using one of the many steam spray producers, found in our instrument stores, the expectoration, hoarseness, etc., will soon be greatly increased. Not unfrequently I have observed, after such a course of treatment, streaks of blood in the muco-purulent secretion coughed up, when this is the case the pain, chest symptoms, and the anxiety of the patient will be increased.

The voice sometimes becomes affected, and takes on a hoarse or husky tone, especially after speaking or reading twenty or thirty minutes. If the speaking is persisted in, the pain or rather the weariness becomes excessive, so much so that to even listen to reading or speaking by another person is wearisome.

* From advance sheets of "The Hygiene and Treatment of Catarrh" [now in press]; pp. 500. [Geo. O. Rumbold & Co.]

The voice cannot at all times be taken as a guide to the amount of disease in the larynx, as there are many patients who are hoarse at the commencement of a speech, but soon lose this symptom as they proceed.

About this stage of the complaint, involuntarily and without knowing the reason for his doing so, the patient will, after he has forced the soft palate against the posterior wall of the pharynx, forcibly draw air through the nostrils, thus bring down a part at least of the accumulated secretion from the pharyngo-nasal cavity into the pharynx, and from there hawk it up. The relief following this effort will be just in proportion to the quantity removed from the pharyngo-nasal cavity. Frequently the effort to draw the secretion down from behind the velum will be unsuccessful, then the irritation caused by the accumulated secretion will be sufficient to call for aid from the pneumogastric nerve, which sends branches to the mucous membrane and muscles of this cavity. This nerve will cause contraction of the superior constrictors, as well as cause an increased outflow of fresh mucus, which may, and does in the majority of instances, remove the offending matter; but, the superior constrictors cannot act alone, for the reason that the nerve that causes them to contract also produces marked effects on the stomach, resulting in efforts at retching and sometimes actual vomiting. This sickness of the stomach is usually very disagreeable to the patient, and, together with the frequent coughing, causes pain and distress in the chest, which in turn fills him with anxiety, from fear that he has some serious lung trouble.

If the secretion in the pharyngo-nasal cavity is not removed the patient will continue to cough, but for several days he will not raise the least secretion from the larynx. After he has continued this coughing and hawking, the exertion of the larynx will, in a few weeks, cause sufficient irritation to give rise to the flow of a tough, frothy mucus of a whitish color, the irritation not being yet long enough in duration to occasion an outflow of muco-pus. It is not an uncommon occurrence for patients to expectorate a jelly-like, dirty colored sputa, which frequently comes out of the mouth before they anticipate it. The coloring matter of this expectoration is not blood or any of its constituents, as supposed by some authorities, but is merely soot and dust inhaled during the day. This is easily proved by microscopic examination.

Frequently, preceding and accompanying these symptoms, are manifestations of more or less disturbance of the nervous system, shown by the tendency to remain awake, should even a slight cause disturb sleep. Then the sensation of dryness in the throat, occasioned by the patient being compelled to breathe through the mouth, the nasal passage filling so soon as the recumbent position is assumed, is particularly noticeable, which is relieved by attempts at expectoration.

Sometimes a patient is awakened by a suffocative sensation. This may be but sufficient only to disturb sleep, or it may be so severe that he will jump out of bed and grasp at any object to support himself, until he gets his breath. Recurrences of these spasms usually take place at such times, each fall and spring, or each fall or spring that he has "taken a cold in the head," but they *will not recur* except on his taking colds that affect the nasal passages.

This is the condition of the patient when he consults his physician. He desires relief for his throat, lung and head symptoms as soon as possible.

Observations, made during the last fifteen years, have taught me that the inflammation that causes the tickling and sensation of mucus in the larynx, is really in the pharyngo-nasal cavity and *not* in the larynx. This can be proved by both inspection and treatment of the parts. The pharyngeal mirror will show but little inflammation in the larynx, and *no* mucus, but if the reflector is turned toward the pharyngo-nasal cavity, there excessive inflammation will be seen to exist, and also a large accumulation of tough, adhering muco-purulent secretion. Now, if this secretion is removed by mild means, and a soothing application be made to the irritated and inflamed surface, the symptoms in the larynx *will at once subside*, to be again experienced only on its re-accumulation. Another evidence that I am right in this, is that four-fifths of the patients on whom the spray from the spray producer No. 4[1] is applied, at once voluntarily say, "that (meaning the spray) went right straight to the sore place in my throat," although not a drop was sent or went into the throat, but all of it went in the opposite direction, i. e., up from the throat into the pharyngo-nasal cavity. Again, should a spray from

1. A spray producer that throws a vertical stream up into the pharyngo-nasal cavity.

the spray producer No. 7[2] be thrown down into the larynx only, *no* relief *will* follow its application.

Hundreds of times have I made an application of a mild remedy into the anterior nares that caused severe spasmodic cough, although when the same remedy was thrown down into the larynx by the spray producer No. 7, no cough was produced. In several instances I have seen complete aphonia during the application of the spray of vaseline alone into the nose. It was found that with some of the patients, the irritation produced by the air alone had the same effect, the vocal disability disappearing in each case so soon as the instrument was removed from the nose, showing plainly that irritation in the larynx can be produced by irritating the nasal cavity.

I have also had a great many patients who commenced to cough immediately on the introduction of an ear speculum into the auditory canal, and one who had for the period of over two years lost his voice for fully one minute after each traction of the pinna of the ear upward and backward.

Now, if the larynx can be thus affected by manipulation of these organs in this way, is it not to be expected that a long continued inflammation in the pharyngo-nasal cavity will in time also affect the larynx?

I think that I can prove by inspection and treatment that fully nine-tenths of the coughs that are now treated with cod liver oil — which when taken is as beneficial for the foot as for the throat — and by the sponge probang and brush being thrust into the larynx, are caused by a chronic catarrhal inflammation of the nasal and pharyngo-nasal cavities.

The inspection of the vocal cords by the pharyngeal mirror, reveals them in a bright red or red color, resembling mucous membrane, instead of being pearly white, much like the white of the eye. The mucous membrane is darker red than usual, the blood vessels larger than usual and a greater number of them. As inspection proceeds upward, the color of the mucous membrane becomes still darker red, until the posterior nasal cavities are reached, where it is bluish red. The pharynx and posterior surface of the velum, when they are cleaned of the adhering muco-purulent secretion, has a relaxed appearance. The pos-

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2. A spray producer that throws a stream directly downward into the larynx.

terior wall of the pharyngo-nasal cavity as well as that of the pharynx are frequently studded with small elevations called follicles, and sometimes look like œdematous drops. Sometimes the uvula is very much elongated. When such is the case, it is frequently made the scapegoat of the tickling, and uselessly excised.

The patient has a history of nasal and pharyngo-nasal catarrh that must be taken into consideration, for the treatment of the case without this would certainly be unsuccessful.

This complaint is never idiopathic, it is always secondary, a sequence of a long continued and neglected pharyngo-nasal catarrh; therefore to treat it properly, the nasal and pharyngo-nasal cavities should be treated along with the larynx, using spray producers, whose combined action will cleanse and apply remedies to the fauces, pharynx, pharyngo-nasal and posterior nasal cavities, and only sometimes the spray producers that act on the posterior wall of the pharynx down to the arytenoid cartilages and into the larynx, spraying with each instrument, one-half dram of vaseline and three or at the most five drops of the following solution:

℞. Pinus canadensis.....grs xv
Glycerinæ [Price's].....℥ j ss
Acidi carbolici.....gr ss
Aquæ fervens.....℥ ss
M. F. Sol.

The vaseline and the drops should be well mixed and made *quite warm, almost hot* before they are applied.

These applications should be made once daily, until the prominent symptoms have abated; then every other day until the secretions cease to be purulent; then twice each week until every symptom has disappeared, taking in all from six to twelve weeks. Should the symptoms reappear in the fall or spring they should be driven off by treatments given once or twice each week. Usually four to six treatments suffices on these occasions. Frequently a prescription for a laxative and diuretic will be needed, as most of these patients are of a costive habit.

Should a cold be taken during the course of the treatment, I prescribe ten grains of quinia, to be taken at bedtime and five grains next morning, with an additional laxative.

Hygienic measures are of the utmost importance with such

patients. Every precaution against catching cold by day or night should be taken. A *restricted and graduated use* of the vocal cords will be found in the highest degree beneficial for all whose voice have become any way affected. I usually give the following directions :

Commence by reading for about one minute (if this can be done *without* pain), then, on subsequent mornings, read one-half minute longer each time. In this way the voice will frequently regain its usual tone and strength.

To improve the singing voice, my patients have found that it was quite beneficial to fill their lungs to their utmost capacity, and, with a *little less than medium force*, sound G continuously until the lungs are completely exhausted; then in the same way sound A, follow this by sounding F, then B, then E, and so on, going each time higher and lower, until nearly the full compass of the voice is reached, always stopping on the least premonitory symptom of weariness.

It is usually best to take these vocal exercises immediately after the treatment, that is in the forenoon, as the effect of the treatment is always, or should always be of a relieving and soothing nature.

Article II.

Yellow Fever; Its Morbid Anatomy.* By C. Spinzig, M. D., of St. Louis, Mo.

yellow discoloration.

Of all the morbid conditions, by which yellow fever is recognized, the yellow discoloration of the integument has excited great interest and attention, for the reason that its presence is admitted as prima facie evidence of the existence of the fever. But in the realm of phenomena it has been found difficult to discover the material substratum from which the yellow discoloration has emanated, and forming the pigmentary substance. The morbid anatomy of the cutis does not afford a clue; no particular lesions are met with. The evidence could hence not be produced of what the coloring matter consists, which, by virtue of the "specific poison of infection," should have been deposited there, and even the attempts have not been made to advance a rational explanation of the phenomena, which being based on chemical and spectroscopical analysis.

From the research of the morbid anatomy in yellow fever,[1] conducted by prof. Summers at Memphis, in 1878, it appears that the investigation was directed toward ascertaining the nature of the coloring matter, but the results all proved negative. The main evidence tending to elucidate this occult (?) subject is to be derived from general (but actual) scientific inquiry conducted in the physiological laboratory. There experiments can not be entered upon, and processes conducted on the basis of the *speculative naught*, the "specific, dualistic, infectious X," but palpable or perceivable matter and physical conditions are and must be employed in order to produce any contemplated result; the facts are there produced by which the inquirer is enabled to explain the tint in yellow fever patients, and is, simultaneously, convinced of this occurrence in common with other icteric diseases (cholosse). From physiological research the positive evidence is derived in explanation of the nature of the yellow hue in yellow fever patients, namely: That it consists, as we have further above already indicated, partly in the decomposition of haemoglobine, by an excess of CO_2 in the blood, and partly in an ad-

*Extracted from "Yellow Fever; its Nature and Epidemic Character" [now in press]. By C. Spinzig, M. D. [Geo. O. Rumbold & Co.]

1. l. c., pp. 29 and 30.

mixture of biliary matter containing biliverdine[0] to the circulating fluids through the blood, and lymph vessels,[1] in consequence of the statical pressure in the liver.

These substances (i. e., CO_2 and sulphuretted hydrogen, the latter arising from the decomposition of the taurine of the biliary matter) with oxygen form a greenish discoloration which turns into yellow as the complimentary colors of the spectrum inversely cover one another and blend in a manner that green and red form a light yellow color, and green and yellow a greenish-yellow.[2]

To prove further the "endogenic" origin of the coloring material in yellow fever, and its original homogeneous nature, attention must be invited to the facts that biliverdine is derivative from bilirubine, and the latter is formed of the hæmatine[3] of decomposed blood corpuscles (the decomposition of blood corpuscles takes place on a grand scale in yellow fever.) Again hæmoglobine also exhibits a marked greenish hue or two lines in green in the spectrum,[4] without being decomposed, simply by great attenuation. In yellow fever this condition is predominant as the blood is greatly expanded, and markedly impoverished. The cutaneous yellow discoloration, it ought now be fully evident, can only be recognized as one of the forced resultants of the physically and chemically altered state of the circulating fluids, constituting the morbid process of yellow fever, of which (meteorological) influences form the "ectogenic," the structural alteration of the glands of secretion and their subsequent interrupted performance of function the "endogenic," and the physico-chemically altered state of the circulating fluids the "amphigenic" causes from which this disease originates. The verification of these axioms is embodied in the records of the most recent observations, where it is stated that the cutis turns yellow secondarily; at first (i. e., in the incipiency of the general venous stasis) it is rather purple, and the yellow tinge is observed consecutively when the blood has sufficiently changed in its physical and chemical character.[5]

0. Biliverdine stains mucous surfaces and the cutis yellow. Comp. L. Hermann, Grundriss d. Physiol. p. 97.

1. Comp. Samuel, l. c., p. 321.

2. Comp. Mueller, Handbuch der Physik, Vol. I. p. 589.

3. Already intimated by Canstatt, l. c., 2d edt. Vol. II, Part I., p. 382, foot note.

4. Comp. L. Hermann, l. c., pp. 29, 44, 98.

5. Comp. Beranger-Feraud, l. c., p. 195, and Summers, l. c., p. 30. In connection with these facts it is highly interesting what Beranger-

BLACK VOMIT.

The ejection of "black vomit" from the stomach is no longer regarded pathognomonic of yellow fever. In Great Britain, according to Anstie,[1] the observation is frequently made that typhus and relapsing fever are attended with the same symptoms, and Summers[2] states that it is met with "under some circumstances" in other diseases. This author observes further, on the evidence of 482 post mortem examinations, that the dark substance of the vomited matter is simply degenerated biliverdine, and the additional ingredients usually being large proportions of broken down blood corpuscles, detritus of liver secretions and liver cells. These facts, in the opinion of Prof. Summers, indicate that the black vomit is of hepatic origin, and not being produced by a hemorrhage from the stomach and other parts, notwithstanding the assertions of other recent writers to the contrary,[3] as great quantities of this substance were found in cases where an evidence of gastric inflammation or congestion could be indicated.

Reviewing these facts, set forth by direct research, and yielding to the interpretation: The dark substance of the black vomit is derived from biliverdine, the inquirer cannot desist from being impressed with another fact, and which is potent in this connection, namely: That biliverdine is a secondary derivate of hæmatine, a substance rich in carbon, and is of a dark color.[4] Thus by positive knowledge, as established by experiment and analysis in the physiological laboratory, although of purely scientific nature, the clue is afforded which aids to explain the nature and origin of the dark substance in the black vomit. It would hence appear immaterial, from the facts here set forth,

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Feraud further observes—p. 197—and owing to the importance and direct bearings of his observation the quotation may be reproduced in the author's on tongue: "C'est un ictère qui ne provient pas de la bile, car on ne trouve pas les éléments de cette bile ici dans les urines, ni dans le sang. Cet ictère coincide avec un ralentissement remarquable dans la circulation capillaire, mais n'est pas concomitant avec un grand relentissement du pouls."

1. L. c., p. 80.
2. L. c., pp. 35 to 38.
3. Comp. Beranger-Feraud, l. c., p. 233.
4. Comp. Hoppe-Seyler, Chem. Analysen, p. 172.

what view may be entertained, whether this dark material is derived from broken down blood corpuscles directly, or from biliverdine. Admitting the hemorrhagic origin to be true, then simply from a decomposition of oxyhæmoglobine and hæmoglobine, by an excess of CO_2 hæmatine would precipitate, and this substance in itself would be sufficient to impart to the vomited matter the dark color. But on the other hand, viewing the coloring matter to be "degenerated biliverdine," the ultimate result or the chemical rationale in the origination of the coloring material of the black vomit, is the same as under the other point of view. The ascertained facts of the physiologico-chemical nature of biliverdine prove, as we have already seen, that it is derivative from hæmatine forming, in the process of morphology, primarily as bilirubine, and secondarily as biliverdine. "Degenerated biliverdine" must of necessity chromatically exhibit the same physical character as hæmatine, for they are but transformed to biliprasine, and which substance, analogous to hæmatine, would tinge vomitted matter dark.[1] Thus the irrefutable fact is again verified that, namely: Physiological morphology is the elementary antecedent of pathological morphology, and that the latter can only be specifically determined by the material involved, which, however, is homogeneous, but reacts morbidly while being chemically differentiated in its synthetical formula. The origin and nature of the coloring material of the black vomit is therefore fully known, and the hypothetical "X" or "imported" (exotic) "extogenic," or "specific poison of infection," generally believed to be the originator and a component part of the black vomit, must be consigned to its proper abode—to supposition and mystification.

A further source of dark discoloration may still be mentioned, which is capable of assuming great magnitude in diseased processes, or processes of dissolution, where colorless protoplasma is largely exuded and transuded, namely: When CO_2 (which is present in yellow fever in excess) is conveyed to protoplasma, it darkens (truebt) it.[2]

The exemplification may be found in the dark (black) expectoration, which generally is observed in chronic spleen affections,

1. Comp. Gorup-Besanez, Organische Chemie, p. 692, et seq. Hoppe-Seyler, Chem. Analsen, p. 172, et seq. Hoppe-Seyler, Physiol. Chemie, pp. 398-99. L. Hermann, Grundriss d. Physiol. pp. 29 and 98.

2. Comp. L. Hermann, Handbuch d. Physiol., p. 463.

when an undue proportion of large white blood cells circulate through the lungs and are from the action of CO_2 on them expectorated as a broken down or a structureless black mass.

The fact of finding, usually, large proportions of blood corpuscles, more or less deranged or broken up, in the vomited matter, would strongly point to the hæmorrhagic origin, and as also liver cells are met with in them, it is to be inferred that, in a great measure, the blood is derived from the liver as one of the consequences of the morbid actions through which the liver is rendered "almost entirely devoid of blood."[1] But the hæmorrhagic increments are not alone of hepatic origin; they may have been imparted by hæmorrhagic effusion from the surfaces of the œsophagus and stomach. Ecchymosis is frequently observed in the epithelial coating of the stomach, having resulted from ruptured vessels, which were lardaceously degenerated.[2]

But, to allude to all the morbid changes that are observed in yellow fever, is not here the intention; only to those that tend to elucidate the histo-chemical processes (patho-chemistry) or their origin. In that respect, first of all the structural changes which must be described, are those of the

LIVER.

This organ deserves first mentioning, as in it the primary steps take place toward developing the yellow fever, owing to the interruption of its function from mere physico-mechanical influences. The kidneys and spleen are of secondary consideration; although their deranged functions perform an important part in the histo-chemistry of yellow fever; the rest of those organs morbidly altered can safely be classified as complications.

Of 482 autopsies held by Summers[3] over those that died of yellow fever at Memphis in 1878, as a summary statement with reference to the morbid alterations of the liver, that author was pleased to say: "I have failed to remark anything very extraordinary concerning the liver in yellow fever beyond the simple cessation of function;" and, therefore, the hepatic lesions appeared to him "of a negative character."

1. Comp. Summers, l. c. p. 21.
2. Comp. Beranger Feraud, l. c. p. 312.
3. L. c. p. 21.

The evidence, however, submitted by Béranger Féraud[1] of 551 post-mortem examinations is quite different. Of this number that author relates the morbid alterations of the liver of 473 cases, which were specially examined: 25 of them presented vascular turgescence, 30 structural enlargement[2] (consistance augmentée), 22 were yellow and gorged with blood, the rest were brittle and bloodless, and presented a great variety of discoloration; whereas, Summers merely mentions the yellow (boxwood) tint.

The microscopical examination, as is narrated by Béranger Féraud, reveals the following facts: The perivascular connective tissue is thickened and slightly hardened. The hepatic globules have a uniform aspect: their cells are hypertrophied (deo m.m 0176 à 0 m.m 0 394); the nucleus when it exists is rather visible, and is quite large, and sometimes there are two of them. The hepatic cells contain, without an exception, fat globules rounded and in varying numbers; sometimes there is but one, and it fills the cell and nucleus, being flattened and atrophied. The inter-cellular spaces are widened and contain no more connective tissue, but a granular protoplasmatic substance properly belonging to the broken down hepatic cells.[3]

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1. L. C. pp. 290, 316–321.

On this occasion it may not be improper to state that for the home records on this subject requisition was made to the Health Department of this city, knowing that nine autopsies on yellow fever cases were held at the quarantine, and the request was kindly granted and the report of autopsies furnished. It is, however, lamentable that the scientific part usually shares in the government of city Health Departments, so that scarcely anything can be made available for scientific research. As a general rule, objects of scientific value are consigned to refuse. This city contains immense facilities for inquiry on all topics of the medical science; but, as it appears, political qualifications elevate to office and scientific attainments are usually disregarded. The sphere of activeness of our Health Department has as yet not exhibited a completion of its scientific task.

2. Of nine post-mortem examinations held at the St. Louis Quarantine five proved enlargement of the liver.

3. With these statements also agrees the report of post-mortem examinations performed by Dr. Marvin.—Amer. Practitioner, Nov., 1878.

The statements found in the proceedings of the Louisiana State Medical Association, April 9, 10, 11, 1879, p. 146, in reference to the morbid alteration of the liver structure in yellow fever, are too indefinite in order to be available, and do not appear to be based on personal observation.

KIDNEYS.

Not always are these organs found morbidly altered, though some writers assert to the contrary (Summers, Crevaux, etc.), but to others (Alvarenge) only thirty per cent are found morbidly altered. According to Beranger Feraud, of the total number of 551 autopsies 82 per cent were discovered structurely altered, and only 18 per cent appeared unaffected.

The principal morbid changes, uniformly observed, are said to be general enlargement[1] and congestion of the cortical portion, especially in cases in which the disease terminated fatally after a short duration; in the other cases a fatty granular degeneration was observed, involving all tissue elements. Sometimes cysts were found, which were apparently produced by the atrophy of the connective tissue of the Malpighian glomerules that were more or less "vividly" discolorated by biliverdine (not bilirubine), but containing no "colloid matter," but rather serous contents, and which being the consequence of a long preceding interstitial nephritis.

SPLEEN.

It appears from the records submitted by Summers that the spleen is always found markedly and characteristically altered, its lesions being of uncommon prominence, and although resembling those that may be found in common with other febrile affections, yet they were sufficiently well defined. This author found the spleen greatly hypertrophied,[2] its parenchyma distended and the Malpighian bodies swollen — many of them ruptured. Albumen was found largely deposited in the splenic substance in the form of stringy coagula, and a doughy consistency of the splenic substance was observed, resembling the condition known under the term amyloid degeneration. The chief characteristical differences were, that, in yellow fever, the spleen is soft and swollen, with a thin and tense capsule which is sometimes even ruptured, while in intermittent fever the organ is indurated and forms what is denominated the *ague cake* (hence, rather hard).

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1. Of nine domestic post-mortem cases seven were found with enlargement of the kidneys.

2. Of the nine post-mortem cases of St. Louis Quarantine in six the spleen was found enlarged.

However, the records given by Beranger Feraud[1] do not accord with those of Summers, but of which the latter author was, probably, not aware, however, he observes already in the outset that "the pathology of yellow fever, as set forth by different authors, is strangely conflicting" — neither those agree of the "Transaction of the Clinic. Society of London,[2] nor the other submitted by Haenisch.[3] Some of the differences stated by Beranger Feraud are the following: "The spleen does not present any pathognomonic alterations in yellow fever; its volume, density, physiological state of integrity, or its lesions, are in correspondence with those arising from other causes." The facts of observation stated in the Transaction of the Clinic. Society of London fail to corroborate those stated by Summers, as the spleen was found unaltered, excepting that some vessels were surrounded by chronic fibroid thickening. The negative evidence stated by Hænisch is not quite so direct, as this author remarks that the spleen is not greatly altered (hypertrophied), only being slightly softened and looks darker, and the parenchyma is sometimes rather fragile.

Now, those facts are of particular interest, as they tend to indicate that the spleen is only secondarily affected, as the lesions are not constant, which ought to be the case, according to the doctrine of "specific infection." The "miasmatic," "putrescent" and "specific poison," when having access to the human organism, is supposed to affect the spleen, primarily owing to the immediate toxical (fermentative) effects, which are asserted it produces in the blood, and hence cause the spleen to swell primarily and invariably.

However, excluding the idea of hypothetical influences and that of presumptive processes as the source of the origin and development of the morbid alterations in the system in general and in the spleen in particular, and simply admitting physical influences as the causes of yellow fever, of which the variations have reacted morbifically, certainly the blood and lymph—the circulating fluids—are primarily affected, and then only physico-chemically. The interference of the performance of functions of special organs arising therefrom, if that cannot

1. L. c. p. 321.

2. L. c. pp. 192 and 196.

3. Ziemssen, Handbuch, etc. II, p. 488.

be corrected by the systemic physico-chemical reaction, structural alterations ensue, and by which the general morbid condition of the system leading to the development of yellow fever is reciprocally augmented and intensified. The first of the organs to be affected is the liver (not the spleen), as its histological elements do not bear collateral pressure.[1]

HISTO-CHEMISTY.

Ample proof, probably, has already been submitted under the heading "etiology and genius epidemicus," that the process transpiring in the human organism and terminating in yellow fever are caused by physical influences (meteorological variations); here, probably, it is only needed to indicate the manner in which those transformations are accomplished. It is therefore indispensable to study the primary influences and their reaction upon the human organism, or the biological fluctuations produced by physical surroundings.

It has been seen that yellow fever has prevailed with a degree of intensity proportional to the meteorological variation of a given locality, and that in accordance with the special or general shadings of those influences the sanitary state of the inhabitants exhibits noticeable and essential differences—either being exempt from or severely afflicted with the fever.

From the evidence of the law, which further above was already submitted, it is now understood that an atmosphere of high barometric pressure, or of less elevation of temperature contains a higher per centage of oxygen, and that thereby, in a common altitude (that of, or within 1,000 feet over, the sea level) an increase of the frequency of respiration and pulse is produced, augmenting the exhalation of CO_2 from the lungs. By a reduction of atmospheric pressure and by a higher degree of temperature, particularly when accompanied with dryness (which usually is the case) an influence is exercised of quite a reverse nature, but favorable to the development of yellow fever.

It has also been made apparent that at every locality, when an epidemic raged, a period of predisposition was noticed, sometimes but slightly, and usually in the preceding summer, but if, exceptionally, the preceding summer months failed to exhibit variations, favoring the development of morbid processes, it

1. Niemeyer, Lehrbuch der spec. Pathol. und Therap. 6th edit., vol. i, p. 659.

will be found that they prevailed in the preceding winter and spring seasons (i. e. of the year of the epidemic,) and consist, mainly, of a reduction of barometrical pressure and an undue elevation of temperature.

These facts are illustrated by the meteorological data of Memphis, which show that in 1877 the meteorological fluctuations were such as not to predispose to disease, but the predisposing influence for the summer and fall of 1878 were prevalent in the earlier part of the same year, which we will reproduce here and differentiate them by a comparison of the year 1875. This year was one of the most normal years as to meteorological variations, and, as we have already alluded to, when no disease of any special character prevailed.

Monthly means of extremes of the reduction of atmospheric pressure, and elevation of temperature at Memphis in 1878:

MONTH.	BAR.	THER.
January	— .13	+ 6.2
February	— .19	+ 5.0
March	— .06	+ 6.9
April	— .23	+ 7.0
May	— .01	+ 2.6
June	— .05	— 2.2
July	— .18	+ 1.3
August	— .07	+ 7.4
September	+ .06	+ 2.9
October	— .02	+ 3.3
November	.00	+ 0.6
December	+ .15	—10.7

By the evidence of these data the proof is afforded that during the first five months of the year such physical influences prevailed constituting the predisposing causes, namely a minus of atmospheric pressure and a plus of temperature, and expressing these extremes in figures the following mean of the five months is obtained:

Bar. — .12 Ther. + 5.5

As to the meteorological data of 1877 of Memphis, which apparently indicate a discrepancy with regard to the prevalence of predisposing influences prior to the epidemic, the evidence, however, which is derived from the data of the table last submitted must appear conclusive to all without diversity of opinion. The period of predisposition prevails; in this case it was

only transposed from the previous summer to the winter and spring season of the same year.

Before entering into the minute examination of the histo-chemical process in yellow fever, which ultimately result in those lesions which make up the morbid anatomy, it would appear a prerequisite to analyze some of the physiological effects of those influences on the human organism that result into regressive action. It would thus be proper primarily to advert to the consequences occurring from the reduction of atmospheric pressure, or reciprocally arising from the force of expansion. Bodies expand in volume proportionately to the reduction of atmospheric pressure, according to their physical character, owing to the law that the force of expansion is on an inverse ratio to the diminution of atmospheric pressure [1] the fluids of the human body, *a priori*, must assume more space, and hence constitute one of the primary steps in pathological chemistry.

This proposition is well sustained by the fact that the blood and lymph, also the gases of these fluids, exhibit a material degree of expansion when the depression of the barometric column amounts to several inches, either in a balloon ascension or on the tops of mountains, so that the blood may be pressed through the skin, pulmonary tissue or other organs.

Under slight reduction of atmospheric pressure, dizziness, vertigo, somnolence, languidness, and relaxation of the muscular tissue is experienced; sometimes bilious vomiting or bilious diarrhœa ensues, a result of venous stasis, and which again is produced by the force of expansion in the volume of the blood. Similar inconveniences are experienced by many persons prior to the approach of a tempest, and those who are "weather indicators" prognosticate, by some particular irritation, a particular change of the weather to take place even several days prior to its occurrence; the cause of the irritation is merely the force of expansion in operation. Moreover these physico-pathological impressions are gravely augmented by a sudden and great excess of temperature, which in the summer months frequently leads to insolation [2] (sunstroke.)

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1. For a definition of this law I am obliged to Professor A. Litton, St. Louis Med. Col., who kindly communicated the desired information in a private note.

2. In the month of July, 1878, such was the experience to an alarming extent, in this city, and has already been alluded to.

Although of the exact degree of expansibility of the blood as a body, data are not at my command, but it is well known that from the gases (O., CO_2, and N.) forming component parts of the blood and lymph, carburetted hydrogen with ammonia is readily formed in regressive action; being gases of high expansibility, they swell the volume of the blood many times, produce a high degree of venous turgescence (e. g. narcosis of chloroform), and consequently a large augmented "collateral pressure."

If in this connection the clinical fact, long since recognized[1] and in this treatise also already alluded to, may be called to mind, namely, that the liver cells while in the physiological or healthy state of action—in the elaboration of bile—do not bear undue lateral pressure unless at once suffering morbid alteration. In the morbid state the pressure meets with still less resistance, owing to the tissue elements being in a great measure deprived of the natural degree of elasticity as the fatty degeneration is then in its commencement, the interference of the performance of function and the consequences resulting therefrom may be well understood, particularly when the interrupting influences continue to exist for an entire season.

Every one exposed to those influences becomes afflicted, but all do not suffer alike, as the individual organization exhibits a certain range of the force of resistance, hence while a large proportion of the population will suffer, only a certain small percentage will succumb. In the original essay on yellow fever, published in 1874, we have already pointed out that by the action of the liver cells primitive compounds are elaborated from the portal blood by hydrolytical cleavage, namely mucine and glycogen.

Mucine is the ammoniacal or alkaline substance which, from all probabilities is essential for the formation of bile; glycogen, the other product, forms under the access of arterial blood into the acini,[2] and which is derived from the hepatic artery. This substance is, from all indications, a suboxide, and is carried by the hepatic vein into the vena cava, reaching thus the lungs, where it eagerly attracts oxygen from the atmosphere and thus constitutes the "vital" impetus in the process of respiration.

1. Niemeyer, l. c.

2. A view suggested some years ago by a distinguished colleague, Dr. John Faber of this city.

But efforts have been made by doctrinarians to discredit the influence of the hepatic histo-chemical action, here set forth, over "vital" action, and over the formation of the physiologico-chemical substrata named in forming the essential increments in general physiology, on the ground that no unquestionable proof is as yet found on record demonstrating those processes to take place in the manner indicated, and the products described were not yet found thus elaborated beyond doubt.

These scruples are, however, readily removed by showing the fact that portal blood contains in 1,000 parts 5.75 fat, whereas the blood of the hepatic vein but 0.97;[1] that further, by way of metamorphosis from lardaceous substance mucinous substance is formed, and from mucinous-lardaceous substance[2] (particularly in regressive action). Also by another fact, namely: That if from any cause whatever the blood circulation of the liver is interfered with, which most readily takes place owing to the double capillary system, the cells of this organ will fail in their physiologico-chemical action in cleaving (separating) mucine from glycogen, and that, consequently, these cells then undergo a fatty degeneration. The blood subsequently conveyed to the pulmonary circulation can not be completely oxygenated in the lungs as residual (ammoniacal) material is left in it, and on this account in itself generates an undue proportion of CO_2 by the absorption of oxygen from tissue elements and from other blood corpuscles; thus the blood is stained characteristically dark, and for the increased number of fat globules there may be found the cause of their origin, also for the formation of urea in the blood.[3]

From the plain processes and simple pathological conditions just now indicated, and of which, as we have seen, the original cause is the force of expansion—the physical equivalent following in an inverse ratio upon the reduction of atmospheric pressure—and being intensified in reaction by a simultaneous excess of solar heat (the temperature), the data submitted in the last table gain in significance. They show, and which is worthy of remembrance, that during the first five months a depression (−.12 mean) of atmospheric pressure prevailed, and that such a

1. Comp. Hoppe-Seyler, Physiol. Chem., p. 468. Samuel, l. c., p. 301, states blood in general contains in 1000 parts 2.5 fat.
2. Virchow, Tumors, Vol. II. p. 399,
3. Comp. Beranger-Feraud, l. c., p. 327.

depression corresponds, on the basis of an inverse ratio, with a + 24 of increase of the force of expansion, therefore pressing upon the liver circulation twenty-four times as much as the atmospheric pressure is not below its normal mean and being intensified in reaction by an excess of + 5.5 mean of temperature. With these facts in regard to the fundamental law of nature before us, the thoughtful observer can no longer be indifferent, and for the dogma of "specific infection" not even a shadow of evidence of its existence remains.

From the nature of those meteorological influences the physiological functions of the liver were so severely encroached upon that, as a natural consequence, the hepatic chemistry failed in the hydrolitic action to separate mucine from glycogen, and the lesions of the blood, augmented by the consecutive structural lesions of the liver, find their *forced* origin, from which results the development of yellow fever in summer and autumnal months, at which time the meteorological variations augment the morbid reactions.

It must be borne in mind that but slight pressure upon interacinous capillaries suffices to cause a regurgitation of bile into the blood; and pressure upon the portal vein, as also upon the navel string, causes CO_2 to collect in the blood,[1] leading, as we know to yellow discoloration[2] from the attenuation of the blood, and from the decomposition of the hæmoglobine of the blood corpuscles regressively forming into yellow coloring matter (biliverdine.)

In the following summary there are found five different modes of origin of the yellow discoloration, viz.:

1. Pressure upon the biliary vessels by which bile is forced into the blood and lymphatic vessels.

2. Pressure upon the portal vein, thereby causing a development of an undue quantity of CO_2 in the blood, resulting in a subsequent yellow discoloration of the cutis.

3. Pressure upon the navel string, thereby producing the same effects in the portal circulation as by pressure upon the portal vein of the adult.

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1. Comp. L. Hermann, Grundriss d. Physiol., pp. 97 and 155.

2. Comp. for histological analogy of hepatic and placental circulation, and histo-chemical action on the composition of the blood or the development of yellow discolvration. Flint, Physiol., Vol. Secretion. Hering, Stricker's Handbuch der Gewebelehre. Rosswell Park, Maternal impressions.

4. Attenuation of the blood by water and gases (CO_2, carburetted hydrogen with ammonia, and sulphuretted hydrogen,) producing the chromatical reflex, in the blood, of the yellow color.

5. Direct decomposition of the hæmoglobine of the blood corpuscles in consequence of contusions, forming bilious coloring matter in the extravasated blood[1] when entirely disconnected with the hepatic circulation.

The "hæmatogenic icterus" can not be precluded, its occurrence is too intimately embodied with the pathological chemistry, or that of yellow fever. The evidence is now so fully presented and is in its bearings so entirely conclusive that nothing should restrain us any longer from announcing the fact: There is nothing peculiar or inexplicable in the discoloration of the tissues in yellow fellow. As we have seen, the same discoloration results from various causes, and is present in various conditions and in different affections, yet it has its origin in common, namely: In the composition of hæmoglobine transforming into biliary coloring matter, and in the physical chromatic reflex. In yellow fever the origin of the discoloration can only be recognized as the result of physical influences, manifested firstly, by the pressure upon the biliary vessels; secondly, pressure upon the portal vein; thirdly, attenuation of the blood by gases, and fourthly, decomposition of hæmoglobine, forming regressively biliary coloring matter extraneous to hepatic connection.

The physical influences in operation producing the causal momenta of the development of yellow fever in human beings are, as we once more repeat, reduction of atmospheric pressure to a degree below the mean; elevation of temperature above the mean; and deficiency of rainfall also below the mean, or, collectively expressed, summer extremes.

One more of the morbific influences remains to be indicated which, in the pathological chemistry of yellow fever, it is a powerful reagent; it injures the blood directly. Its reaction is intensified when the nitrogenized component parts of the blood are not previously sufficiently reduced by the action of the urinary secretions, or an excess of ammoniacal matter in relation to the climatical surroundings is eliminated, a large proportion of the blood corpuscles will then be broken up and the degree of mor-

1. Hoppe-Seyler, Physiol. Chem., p. 399.

bidity as well as that of mortality is in a great measure thereby determined. To it, however, we can here only allude. The records of those localities that were infested with yellow fever abundantly prove that, at least two and frequently all three of the essential meteorological influences simultaneously supervened, and if then the law in physics is borne in mind, barometrical depression, thermometrical elevation, hyetal deficiency is followed by a stagnant air charged with a disproportionately high degree of relative humidity, which has arisen from an increased degree of evaporation, the other law presents itself in full potency that, namely, the

CALORIC

(of the the human organism) can not properly be given off—only in a rate of a little more than one-third—and thereby acting most seriously upon the solubility of the albumen in the circulating fluid, and strongly predisposes to its coagulability (to the formations of capillary embolism ?)

From inquiry the facts have been derived that at 0° in dry air 293.040,and at 30° (C.?) in moist air 105.390 of caloric units were given off,[1] thus exhibiting a difference of nearly two-thirds less in warm and moist air.

As long as the temperature of the human body is equalized by evaporation the degree of temperature will not assume a febrile state, but when the surrounding temperature (that of the atmosphere in our point of view) is approaching that of the blood heat and is moist, a fever temperature ensues at once; organs already structurally altered are, under these influences, prone to undergo a fatty degeneration.[2] The fever temperature in yellow fever has been observed to range as high as 111°.1 (F.?). [3]

In view of these details of nature's law of general relativeness, or of the reactions manifested by the human organism in consequence of physical surroundings, exhibiting either healthful or diseased actions, it would not only be of interest to compare the data of specialized meteorological influences with the general hygienic fluctuation of those localities and districts that are liable to be infested with yellow fever, and immediately

1. Comp. Pettenkofer, Populaere Vorlesungen. Samuel, l. c. p. 735. Lombard l. c. Tom. I. p. 273.

2. Samuel. l. c. p. 335.

3. Proceedings Louisiana State Med., Soc., p. 140.

prior or during an epidemic above synoptically submitted, but it is all important to compare them with those of the general tables, found at the close of this volume, for the series of years therein specified, particularly to contrast them with those of the healthy years; they correspond precisely with the hygienic fluctuations.

It is chiefly due to these potent influences over health or disease that immigration from northerly regions proves dangerous—not so from southerly regions—as in the portal circulation of those who come from northerly districts all the elements are contained, owing to the fact their system is adapted to the northern climate and in the sudden transition to a southern climate and its variations finds its elements readily transformed into compounds constituting the chemical ingredients of the process of yellow fever.

ARTICLE III.

MALARIA. ANNUAL ADDRESS DELIVERED BEFORE THE MADISON COUNTY (ILL.) MEDICAL SOCIETY, AT EDWARDSVILLE, APRIL 27TH, 1880. By J. L. R. WADSWORTH, M. D., President, of Collinsville, Illinois.

GENTLEMEN:—Another year has been added to the history of Madison County Medical Society, marked with evidences of more general interest and greater personal effort on the part of its membership. We feel like congratulating the society, in that it has taken its place in an humble way along with other similar organizations of the day, and that the members have determined to bear their part in the wide field of investigation and research, and add their mite to the results of the medical advancement of the day. So varied has been this advancement in its several departments, that we find it impracticable, even impossible, to embrace all that deserves mention in a resumé which must necessarily be brief. I must, therefore, crave your indulgence if I make a selection of that which appears, in my judgment, to be the most important.

Anything that bears any relation to that great morbific influence called *malaria* certainly is of paramount interest to us in this region, for no other morbific force compares with it either in the extent of its influence or cost of its depredations. The nation is stirred from one end to the other with the invasion of cholera or yellow fever, forgetting the presence we always have with us. Our minds so much more readily grasp the new and the startling, that the old, familiar facts do not receive their just appreciation. Hence the slow but sure invasion of some of our Atlantic States with this *malaria*, so blighting in its effects and tenacious in its hold, is almost unknown to the people outside of those States, while the late invasion of yellow fever has called forth "National Boards of Health" and "International Medical Commissions" to investigate it.

Here and there we find a mind trying to grapple with this question so little understood, and we are glad to note that 1879 evidenced more inquiry than many years previous, and while

not laying bare to our view this subtile poison, the year's work has added more data perhaps than a century before.

The etiology of malaria still remains as inscrutable as it did to the great fathers of medicine—occupying the most anomalous position—varying in character—changing in form. It extends from Hudson's Bay in America and Central Russia in Europe to the tropics; an inhabitant of the lowest valley or mountain height; flourishing alike amid the greatest extremes of temperature like unto our own region to the even climate of the tropics; from the dry plains of America and the deserts of the old world to the saturated atmosphere of the African jungle or Amazonian valley. While marked distinctly with a character of its own, it will ally itself, as it were, to any other morbific influence, be it toothache or typhoid fever; a respecter of no class of people, sex, age, constitution or occupation. It may exhibit itself as a sporadic, endemic, epidemic, or pandemic. Is it strange that a morbific influence of such apparently inconsistent character should be difficult to trace and define? And yet it undoubtedly possesses as well a defined character as the law of gravity, did we only understand it.

Before calling your attention farther to this subject, allow me to recall to your minds a few only, and very briefly, of the more prominent theories that have been before the profession.

Lancini, in 1695, was the first to call attention to the exhalations of low, wet marshes, and a little later these exhalations were associated, with the decomposition of vegetable matter, and has been called the "paludal theory." This theory obtains the most followers by far to this day. The constant association, in many places, of malarial fevers with these low, marshy lands and river valleys is so marked that this conviction is difficult to overcome. To any one who may have passed a season on one of our Western prairies just being settled (as the writer once experienced), where a large portion of the surface of a deep valley was overturned within the short time called the "breaking season" (May to August), and a little later saw almost the entire population lying with malarial fever as flat as the prairie sod that had been overturned to decay, would certainly be pardoned if he stated there was "cause and effect," especially if he knew this same country to be a healthy one—one that was sought after in those days by hundreds of invalids coming from the East every season to pass over these prairies with the great caravans

of those days; exposed to all weathers; sleeping out, unprotected from the night air, on this sod undisturbed—and all this in the search of health, which they most invariably found. So frequent are these associations that the laity constantly uphold this theory of vegetable decomposition.

Dr. J. W. Younge, of Fort Wayne, Indiana, crystalizes the "loose ideas" generally held on this theory in an interesting article on this subject published last month. "The action of a specific albuminoid principle, the product of decayed vegetable matter, appears to be essential to the production of malaria, and this albuminoid element, after its entrance into the human organism, not in the form of a germ but as a malarial gas, is productive of a morbific condition pertaining to the nervous system. Malaria is an element derived from marsh infection existing under a gaseous form and exclusively of telluric origin; an emanation evolving a gas which exerts a morbific influence on those who are exposed to its action. This toxical element in the atmosphere, when absorbed in the human body, is productive of a morbific condition of the blood, and at certain regular intervals of time of intermittence, it will explode, discharge, and finally exhaust itself until a fresh charge is generated by causes either from without or from within the body, and not attended by constant phenomena, as may be observed in typhoid or general fevers. This poison acts upon the ganglionic system and on the blood corpuscles, causing vaso-motor irritation, followed by vaso-motor paralysis, paralyzing that system of nerves that regulates and controls the arteries and the circulation of the blood, creating a condition of hyperæmia and congestion of the spleen and liver, unlike that resulting from inflammation. The poison of malaria alters the character of the blood, producing congestion of the spleen, which, by reason of its relation with the digestive organs, partakes of their intermittent action, and thus establishes a fever of an intermittent type. It is not easy to understand how the nerves that supply the spleen should be specially affected by malaria, yet it is not more difficult of comprehension than how, by an abnormal development of nervous force which manifests itself in the epileptic paroxysm, it gets rid of the disturbance by an attack of epilepsy."

Another theory, "the cryptogamic"—that of the introduction of vegetable organisms of low grade, sphores of fungi, being detached from the soil by the atmosphere and absorbed into the

system through the respiratory and alimentary passages. This theory has been supported by many able men both in this country and in Europe. In the former by Mitchell, Saylesbury and Hammond. In the latter by Scoda, Boxer, McKinzie, Balestra Lanzi and Terigi, Klebe and Dr. Thomasi Crudeli.

You all remember Dr. Saylesbury's remarkable article published in 1866, respecting his observations of the sphores of certain species of Palmellæ as the cause of ague and the subsequent answer by Dr. Wood, in 1868, utterly refuting the points he had made. In Europe the investigations by the microscopists have been more successful. In 1870 Lanzi and Terrigi made some very interesting researches, which resulted in calling the attention of the profession to the so-called pigment granules found in the liver and spleen of persons suffering with malarial cachexia, and which has brought out so much discussion as to their character. Lanzi claimed that these granules were identical with those found in the decomposed algæ, and that they possessed the property of producing a ferment, and he was enabled by cultivation to grow zoolgæ-like vegetation from this pigment of melanemic livers. It will be observed that Lanzi and Terrigi regard the pigment granules found in the blood of the lion and spleen of persons suffering with malarial poisoning not as altered hæmatine, but as a vegetable organism introduced from without and causing not only the pigmentation of these and other organs, but as the etiological agent in producing miasmatic disorders.

But the most important of all recent investigations yet given on this subject was undertaken last spring by Professors Klebe, of Prague, and Thomasi Crudeli, of Rome. They also selected the Roman Campana and Pontine marshes near Rome, the noted malaria foci of Southern Europe, the same as Lanzi and Terrigi, to whom we just referred. They were strictly methodical in their investigations. By experiment they ascertained that they could produce functional disorders and anatomical lesions in rabbits, which was completely in accordance with those following the natural infection with malaria, by the injection of watery extracts from the marshy soil. This accomplished, they endeavored to separate from the watery extract the active germ of the disease; and by appropriate cultivation, in a proper medium, to so isolate it that it could be carefully studied — in which they succeeded. They then forced large quantities of air, taken im-

mediately from above this marshy soil, by an apparatus arranged for the purpose, and forced it upon a glass plate, coated with glycerine and isinglass. Examined by the microscope they found among the particles of dust rods of very small number and filiform elements of some length. These placed under the same treatment as the germs previously found in the watery extract abundantly developed bacilli or microscopical plants, the same in character as those previously developed from the watery extract. These microscopical plants, or fungi, appeared in small rods, growing in long twisted threads, and became furnished with joints at the surface of the liquid where it was exposed to the air. These results were constant in the repeated experiments made at different places. They next tested its nature by injecting into the living animal. After carefully ascertaining the normal temperature and the dimensions of the liver and spleen, they were enabled to judge of its pathological effect. Rabbits were injected with these organisms collected both from the slime and the air of these marshes, every one of which showed intermittent fever after one injection. When they were killed they presented very marked enlargement of the spleen, which contained large masses of dark brown pigment. The spleen and lymphatic glands contained very small, bright corpuscles, which developed, after twenty-four hours, in suitable medium these same organisms, which they named "Bacillus Malaria. These experiments were repeated with the bacillus taken from the soil and air of different localities, and were always attended with the same results. Afterwards Dr. Marshafava, of Rome, found the buacillus in the spleen, the marrow and the blood of three persons, who had died of pernicious fever, showing the same character as those observed by Professor Klebs and Thomasi Crudeli.

The Thermal Theory, as presented in 1872, by Dr. Oldham, denies the existence of *specific poison*, and claims that these fevers are the consequence of chill or "the sudden abstraction of animal heat, which follows abrupt changes of temperature." The early evening air is the most dangerous, because the time is coincident with the greatest thermometrical changes.

The Doctor also claims "that heat without sudden alternation, as in the valley of the Amazon, is powerless. Dampness, as of low wet grounds, acts injuriously by augmenting the conducting quality of the air, and causing the body to cool faster than it

otherwise would; but dampness without a falling temperature is inoperative. Attacks are more frequent in early autumn, because then the circumstances are most favorable to chill. Cool nights, hot days with abundant evaporation, cool and damp nights, and a weakened and susceptible body—all are present."

These views were ably set forth by my predecessor in the chair, the late Dr. Wier. Another view by Dr. Reber, of this State, is given in an interesting monograph, recently published and entitled "Thermal Paresis," based upon the conclusion that malaria is not a poison but simply an effect of solar heat upon what he demominates the "Temperature Centers" of the nervous system. Various other theories have been presented, as the hypothesis of "subterranean gases" finding their way to the surface of the earth—absence or presence of ozone, etc. Respecting these theories, each have had their followers who have strongly defended them and facts certainly have not been found wanting for their defence. But in order to arrive at any proper understanding of the case, only those views that reach out *broadly over the field and over all parts of the earth*, will finally afford us any satisfaction.

Referring to the first theory, that of paludal or march miasm; while our local experience would point strongly in this direction, still it is a fact that many low marshy districts, are free from these results. Malarial fevers are found all through Virginia and North Carolina, yet they are almost unknown in the great "Dismal Swamp," with an area of 150,000 acres of decaying vegetation. Lake Tescudo, near the City of Mexico, with an area of 25 square miles and, is almost laid bare every summer under a temperation from 120° to 140°, and no malarial exhibition follows it. Our forest lands and western wilds produce the most hardy and healthy people—our frontiersman—although vegetable decomposition is at every hand, yet these same regions become severely malarial with the removal of the forests or the stirring of the soil.

The low swampy country in the Southeast of China is considered the most intensely malarial region of the world; still this country is filled with population engaged in the cultivation of rice and so long as it is in the growing state, they are all healthy amid this decomposition, but the moment the crop is cut all flee to other regions, knowing full well the results of a continued stay. We all regard our great American Valley here at our feet as a place where malaria is certainly endemic, but if you will recall

the epidemic of 1875 you will note that while our bluffs and high prairies were most terribly smitten, such as very seldom comes to our experience, our valley was comparatively little affected, and did not reach its usual average of malarial disturbances. Again note, malaria does not confine itself to the low wet marshes.

Witness the effects in the sandy wastes of Africa, where there is an entire absence of vegetable growth. And finally observe its presence in high altitudes. In the Pyrennes Mountains, surrounded with very limited vegetation, malarial fevers prevail 5,000 feet above the sea. In the mountains of Ceylon 5,600; while on the Andes in Peru you will find it 11,000 feet above the sea, displaying its most severe types, while in the surrounding valleys and neighboring plains it is entirely unknown, or only prevails in a very mild form.

There is at this time no chemical analysis approximating even the isolation of any albuminoid or any other form of gas in those marshes that bear any semblance in toxic effect to malaria. There is so much evidence accumulated against this theory that it seems no longer tenable.

This leads us to the thought that has impressed us for several years past. That while malaria may not be produced by *decay* of vegetable matter, *does not the active development of vegetable life modify or abate malaria.*

It is a well known fact recognized by the best writers that certain special forms of vegetation exercise a marked effect on this morbific influence—the sunflower, several varieties of the pine, the eucalyptus, etc. But the effect of the *active, development* of vegetation *en masse* does not seem to be sufficiently recognized. Most all authors unite in asserting that when there is active growing vegetation no complaint is made, only the removal of it, and offer no further deduction, seeming to take it for granted that the coincidence of the decomposition that follows, complicates the production of malaria. Now if the decomposition of vegetation does not sufficiently explain malaria at other times and in other conditions, it may be equally at fault in this case.

In 1875, as previously referred to, malarial fevers were intensely epidemic on our bluffs and prairies, while in the American Valley they were not up to average prevalence. This would seem to be a strange coincidence. But note, vegetation did not commence its growth until mid-summer, on account of the flood-

ing of the valley, *it did not cease active growth until it was cut short by the frost.* We might quote very many such examples. The cutting of the rice fields, the removal of the forests, the turning of the grassy sod, all point the same way. Is it not reasonable to suppose that there must be a *decided impression made*, when this great mass of annual vegetation, such as clothes every nook and corner of the surface of the earth every year, suddenly ceases (by having reached its development) to perform its function of absorption and elmination?

Respecting the investigations of our microscopists, we have so often been disappointed that we look carefully before accepting their theories. It must be admitted, however, that the investigations of Profs. Klebs and Thomasi Crudeli certainly were conducted in a very scientific manner and their deductions seem entirely logical. We commenced some experiments last year with a view to determine the application of this "thermal theory," as advanced by Drs. Oldham, Reber and others to the American Valley—a place eminently adapted for such a test. (See map page 40.) We only regret at this time that our observations are not sufficiently extended to give the weight they deserve. At some future time I may present you with the complete result. We that reside on the border of this valley have all noticed the difference in the temperature experienced on riding, at night-time, (in the summer or autumn) up out of this valley to the high bluffs. Down in the valley we would be chilled with the penetrating cold, but on ascending the bluffs the air would be balmy and pleasantly warm, indicating a marked difference in the temperature. It occurred to us that the residents of this valley certainly experienced, in a very marked degree, the daily extremes of temperature that the residents of the higher lands, to a certain extent, escaped, and as these people of the valley are known to be more subject to malarial diseases, there certainly was some apparent consistency to this claim of the "Thermalists." We determined to test this matter thoroughly, and procured two thermometers, a maximum and a minimum, self-registering, and a hygroscope, (the same as used by the government in the Signal Service,) and duplicates of the same instruments, that we have been using at our home in Collinsville for some time, and placed them in the hands of Mr. John Tethrington, a gentleman well fitted to conduct these observations, and who resides out in the valley, unprotected by any surround-

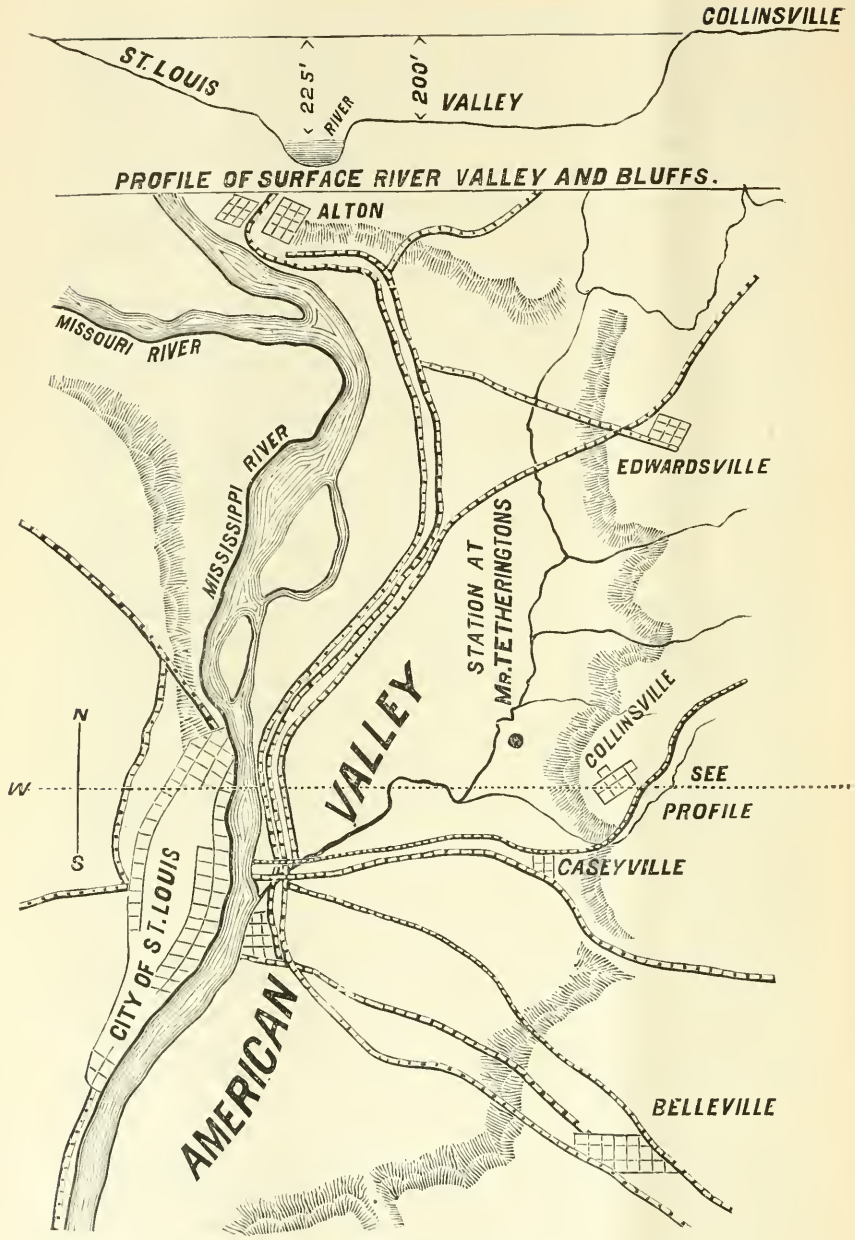

Fig. 1.—See note, p. 41.

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The medical profession has long realized this vital imperfection in all extracts of meat, and desiderated a food for invalids which shall combine the stimulative and nutritious properties of Beef, and be at once palatable and easily digestible. THIS PREPARATION CLAIMS TO MEET THE WANT. It has been submitted to the most searching chemical analysis by the leading analysts of Great Britain, and has been adopted in their practice by the highest medical authorities, all being as one in their appreciation of its substantial merits. It is now offered to the notice of the medical faculty of this country and to the general public, with full confidence that it has but to be known to be popularly accepted.

To obtain a perfect Beef Tea, it is essential that the albumen and fibrine (which are the flesh-forming or nutritious qualities of meat) shall be added to the extractive or stimulative qualities, and that these shall be present in a form admitting of easy digestion by the most capricious and irritable stomach. This is the theory which led to the preparation of "JOHNSTON'S FLUID BEEF" (the only meat extract which fulfills all the conditions of a perfect food.

Dr. Nichols, 131 Spruce street, Philadelphia, says: "I have used it in a case of a child suffering from extreme debility after an attack of cholera infantum; the child began to improve immediately, and is still taking the Fluid Beef. I find it very palatable and nourishing, easily digested, and am satisfied that the contained fibrine is perfectly assimilated by the tissues of the body, as shown by a great gain of strength, etc. I feel assured it will meet with general favor."

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ings. The instruments were properly housed, in accordance with the regulations of the Signal Service, with double shutters, and were about three miles apart, with 200 feet difference in elevation. As these observations have been conducted since last August all of any special interest to us so far as this subject is concerned would rest in the observation of last August and September. The following facts are the result: There was but eight days during these two months when the daily temperature went below the accepted standard for the development of malarial diseases, viz.: 76°. During that time one day presented a temperature of 41° between the day and night temperature. While on fifteen days—one fourth of the time—there was a difference ranging between 30° and 40°—*certainly a sufficient margin to have made that valley a hospital, so far as thermal conditions were concerned.* Again, night temperature indicated a varia-

NOTE.—This great "American Valley" is considered one of the largest deep valleys in America, situated on the east bank of the Mississippi River, bounded on the east by high precipitous bluffs, ranging from 175 to 400 feet in heigth above the river. Its northern limit is Alton, the southern Chester. (Our map does not show the southern half of this valley.) It is about 100 miles long and varies from three to ten miles in width. At no very distant time in the past the channel of the river evidently has been at the foot of the bluffs, and has slowly changed until now it occupies the opposite line of the valley. In making this evolution it has left a large number of lakes occupying portions of its old bed, hence these lakes still bear resemblance to sections of the river in their conformation, as Long Lake or Big Lake, an old bend of the river with an island in it. These lakes are very numerous and are rapidly filling up with the wash from the high lands, so it is only a question of time when this valley will truly become the garden of this country, which is already the case to a great extent. Inundations of the lowest portions of the valley frequently occur, and twice within the present century the whole valley has been overflowed (1823 and 1844, particularly the latter time; steamboats then landed at the foot of the bluffs, now Collinsville.) The "profile of surface" indicates a line drawn from the northern portion of the city of St. Louis due east across the valley to Collinsville, ten and one-half miles east of the river. It will be seen that Collinsville is elevated above the valley about 200 feet; above St. Louis, corner of 6th Street and Washington Avenue, 154 feet; above Compton Hill Reservoir, 46 feet, and 5 feet above a point near the Insane Asylum, the highest ground near the city of St. Louis. In the consideration of the diseases of this valley from a climatological point of view, the large evaporating surface from its numerous lakes and the water level of the ground (which corresponds to the water level of the river very largely, the substratum being sand the water procolates freely through it), and the depth of the valley from the surrounding country must be fully appreciated.

tion, as between valley and highlands, as high as 24°, and during this time (August and September), variations occurred on eighteen nights varying from 10° to 20°. As to the results you will bear me out in the fact, that the American Valley has *not been so free from malarial poisons for many years.*

Again, suppose "chill," (or sudden cold), explains the first paroxysm, what about second and third? Why is the disease not active at all times and places, if only the specified conditions are present? Countries where the changes of temperature are the most extreme are oftentimes comparatively free from malaria, while on the other hand regions noted for their equitable temperature, may suffer from the most pernicious forms of the disease. Again, why does it prevail so generally one year, or a series of years, far beyond its usual limits, and then disappear partially or wholly perhaps for a long period, *the "thermal conditions" supposed to control it having undergone no change?* The Pennsylvania State Society reports that intermittent fevers prevailed along the banks of the Juniata River and the Pennsylvania Canal until 1856, when they suddenly ceased without any known cause. In one year they appeared four miles higher up on both sides of the river, and have never since been known below that point.

According to Hirsch, great difference occurs in tropical regions as to the time of most prevalence. For instance, fevers are most prevalent in Zambia and on the Guinea coast in June, September and October; in Zanzibar (Eastern Africa) from March to May and October to December; Cafferland from September to April; in the West Indies during the entire summer and fall; in Brazil from April to June; in colder climates (Germany, Russia, Great Britain) they most commonly appear in the spring, *at the time of snow meltings, often as early as February.* It would appear that we are inclined to place too much stress not only on heat as a cause of malaria, but also on the other assertion that frost abates it. While both no doubt greatly modify malaria, neither one produces or destroys it. But we cannot dwell upon the long line of evidence that could be advanced against this theory.

There is in the recent history of Connecticut a most interesting field for the study of this morbific influence. A few years ago malarial diseases were almost unknown, many physicians passing through their whole professional career without meeting

a single case. In a recent letter received from Dr. St. John, of Hartford, he states: "I know there is interesting information to be had here. It is a well known fact that ten years ago malaria was nearly unknown. Now it complicates nearly all diseases." Dr. Bronson and Dr. Barrow have both studied this history, and we only wish we had space to quote more from their interesting researches. Dr. Chamberlin, of the State Board of Health, writes me that within the last twelve years malarial diseases began to prevail in the lower valleys of the Connecticut and Housatonic Rivers, near the Sound, and have slowly advanced a few miles each year until now it extends across the northern border of the State; passing up the lateral valley of these rivers, it has extended to the divides and highlands of the State. Previous to 1860, with a few exceptions, it was known only as a sporadic; now it is as thoroughly an endemic as it is with us. Dr. Chamberlin kindly gives me the following table of comparative deaths as between typhoid and malarial fevers. As malarial fever does not tend to fatal results, it will be seen at once how exceedingly prevalent they must be. This table commences with 1869 and closes with 1879 in part only.

	TYPHOID.	MALARIAL.
1869—Deaths from	458	9.
1870— " "	427	15.
1871— " "	352	19.
1872— " "	506	29.
1873— " "	430	30.
1874— " "	370	38.
1875— " "	449	21.
1876— " "	327	22.
1877— " "	321	73.
1878— " "	252	143.
1879—(in part) "	178	179.

This history is not confined to Connecticut. Dr. Lankford states that he found these conditions present on the Hudson River last summer. Many beautiful country seats have been abandoned on account of the prevalence of this disease. In the city of New York *there is the same steady increase.* These facts, with many others that might be adduced, point to the conclusions that there is a general occupation of the Eastern coast line of this country from Cape Cod southward by malarial dis-

eases, and that this influence is gradually penetrating the interior by the way of the river valleys, affecting city and country alike. In applying the theories already presented to this remakable invasion, many conditions are inexplicable.

What becomes of the paludal theory that seems so potent in our regions? There is no evidence that vegetable decomposition is now increased, but rather the contrary. The saturation of the soil of the densely populated centers by sewage, of which much complaint is made, would point to increase of typhoid fevers. The facts in the case indicate the reverse to be true. Malarial ascendant, typhoid descendant. Dr. Bronson to whom we have referred, says: "Though heat, moisture and dead vegetable matter be the usual concomitant and seeming conditions of intermittent fever, *considered as causes*, it appears possible, especially in tropical climates, *to eliminate and to set aside each one of them*. The almost universal prevalence of those agents, their necessity to the unusual living actions which thy are supposed to prevent, may sometime make them difficult, but it is compartively easy to show that there is no uniform proportion between them and the disease in question. If the two (agent and the fever) have the relation of cause and effect, increased or diminished intensity in the first would of necessity be followed by an equal increase or diminution in the second. There must be an entire correspondence, for this the assumed relation requires. Notably this has been wanting in the Connecticut Valley region. Irregularity, and abberracy have been frequent. As a general rule, the dry seasons, when heat, humidity and vegetable decay along the water margins abounded, have been most sickly."

Dr. Barrow, in an able monograph on this subject, refers to the theory of a change of diathesis in disease which predisposes such a change in the human constitutions in certain districts of the country, and under certain conditions, as to render it susceptible to particular forms of disease, and require the administration of remedial agents which had been previously contra-indicated, and also to the theory of climatic change, greater or more protracted heat, a diminished rainfall, a higher average of temperature as affected by the closer approach of the Gulf stream to this coast as causes that may have produced this invasion. The first is undoubtedly occurring in most every community. We note it here in diseases becoming more asthcic in character. The

latter we cannot see as tenable. The U. S. Signal office observes no change in the climatic condition of that region. Dr. Cutter, of Vermont, who has made the climatology of New England a study, writes as follows: "I find no two years alike, yet am of the opinion that there is no special change."

Respecting the approach of the Gulf stream to our coast, Professor Hilgarde, of the United States Coast and Goedetic Survey office, Washington, informs us "that there is no evidence in his office of any such approach. The effect of Gulf stream upon our coast climate is very little understood, and not easily recognizable, as all our weather comes from the West." Respecting the "Cryptogamic Theory," we do see a possible application. We know that certain forms of vegetation do find lodging in countries not previously occupied by them, and that these plants ultimately possess the land. If so with the visible forms of plant life, why not the invisible? If microscopical germs can be made the citiological agent in malaria, all difficulty ceases to reconcile these inexplicable conditions that now surround this subject.

Whether Professor Klebs' deductions be correct, we dare not at this time, venture an opinion. We sincerely hope that these investigations may be promptly carried forward by other microscopists, and whatever merit they may possess may be established.

That these deductions are at this time the only ones that cover the great diversity of conditions under which we find this morbific influence exhibiting itself, does seem to us reasonable. And, if they be not correct, then truly it must be said we have no foundation on which at this time to rest a cause for this mysterious entity.

Reports on the Recent Progress of Medicine.

Article IV.

DISEASES OF THE RESPIRATORY ORGANS.

By Wm. Porter, M. D.

1. Affections of the Tonsils. Lefferts—N. Y. Med. Record, Dec. 1879.
2. Leprosy of the Larynx. Hyde—Chicago Med. Journal, Dec. 1879.
3. Local Anæsthesia of the Larynx. Zawerthal—Conferenza tenuta al Congresso Medico di Pisa.
4. The Respiratory Centre. Langendorff—Centralbl. fur die Med. W. 1879.
5. Hypophosphites in Phthisis. Coghill—Lond. Med. Record, Oct. 1879.
6. Syphilis of the Lung and its Relation to Pulmonary Phthisis.—Schnitzler, Vienna, 1880.
7. Archives of Laryngology. Vol. I, No. 1.
8. Disease of the Throat and Nose.—Mackenzie.

1. In a carefully prepared paper for the New York Academy of Medicine, Lefferts having selected some of the affections of the tonsil as his theme, advises that in all cases the examination be made by the aid of the forehead reflector of the laryngoscopist and artificial illumination, this being both accurate and easy. The looseness of nomenclature in which "quinsy and ulcerated sore throat" cover the whole ground and the conceit which leads some to speak of every throat affection as "diphtheritic" are sharply criticized. The author next discusses the different inflammations of the tonsil with regard to location, viz: inflammation, first, of the parenchymatous tissue; second, of the secreting tissue of the tonsil; third, of the tissues about it. In the first instance if the inflammation proceeds to suppuration, the abscess may be found in the tonsil—(rare) or at the base or in front of the gland (more common). The difficulty of making a sufficient opening with the knife in the latter case calls for special remark.

When inflammation attacks the secreting tissue of the tonsil it rarely developes abscess, but we have the enlarged and vascular tonsils, their crypts blocked up by a thickened, cheesy, opaque secretion appearing upon the surface of the tonsil as-

disseminated spots of a white or yellow color. The points of similarity between this and the milder forms of diphtheria are shown and the differential diagnosis given at length, e. g., absence of the ash gray, lethery membrane of diphtheria and of subsequent paralysis; it is not accompanied by albuminuria; the pulse is full; the average duration is about two days and finally it is a filth disease, associated with some organic impurity of air or water. A good pen picture of acute abscess of the tonsil is then given. The author says: "No treatment local or general will with certainty prevent recurrence of acute inflammation of the tonsil, but both, with avoidance of exposure, attention in matters of climate and hygiene, care on the part of the patient, and excision of a part if necessary, will do much to accomplish this end. Direct treatment apart from constitutional remedies or requirements should be based upon the principles of heat, moisture and mild counter-irritation. The frequent inhalation of steam or a slight aromatic spray of warm water and cologne, and applications of hot spongio-pioline are useful, but medicated sprays are of little service. Where pus is found an incision should be made at once. In peri-tonsillits and follicular inflammation, however, the author uses hourly inhalations of steam and a gargle of choride of zinc—two or three grains to the ounce.

In hypertrophy of the tonsil, if recent, and the mass is soft and elastic, constitutional treatment, local applications of iron, silver, iodine, etc., and "massage" (Quinart) may suffice. Where the change is of long continuance and the tonsils hard and much enlarged, removal must be practiced. The possible sequences of enlarged tonsils are many. The air inspired may become tainted from the diseased follicles, or the alimentary bolus may carry with it morbid secretions, leading to dyspeptic trouble and diseased nutrition. The effects of pressure, from this cause, upon the epiglottis (Cohen) and the soft palate is also noted as well as the fact that through the narrowing of the upper air passage, the lungs may suffer, and nutrition be greatly impaired. In such cases a proper resort to the knife is indicated—either the guillotine or the vulcellum and bistoury. If the latter is used it is best to cut from below upwards. In any case, at least all of the tonsil that projects beyond the anterior palatine fold should be removed.

2. In a former report, reference was made to two cases of lep-

rosy affecting the larynx, from the service of Dr. Elsberg. We are able to note a third case through the kindness of Dr. Hyde, of Chicago, well known as an expert in the field of dermatology. The patient, a Swede æt 43, had two brothers who died from malignant disease of some kind, which first appeared as "small brownish spots" terminating in ulceration. A daughter of the patient is also evidently suffering from leprosy. First evidence of disease in this case was five years since, when small lumps appeared on the thigh; other regions being implicated afterward, the forehead becoming greatly involved. Extending from the middle of the hard through the soft palate is a tongue-shaped patch of split-pea-sized tubercles ending in a thickened and tuberculated uvula. The description of the larynx (illustrated by the courtesy of the author) is especially valuable in this report. "Dr. Ingals was successful in securing an accurate

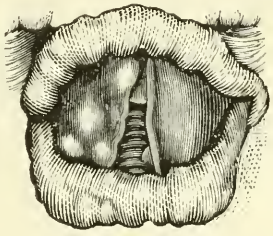

Fig. 2.

drawing of the laryngoscopic appearances which are well represented in the annexed cut. It will be seen that the tubercular development has greatly altered the intra-laryngeal appearance and that the mucous surfaces are also infiltrated and deformed by the same new growth of living matter which has been observed on the surface of the skin. The tumefied surfaces were reddened and the mobile parts extremely sluggish in all the movements of phonation. Five tolerably distinct tubercles are visible, projecting from the right vocal band and one also projecting from beneath that on the left, another projects from the anterior border of the trachea." Dr. Hyde urges the importance of recording all cases of leprosy in the United States. It is only by such careful investigation as is shown in his monograph that knowledge of these fortunately rare cases can be obtained. Such knowledge is doubly valuable when derived from competent testimony.

3. Zawerthal after numerous experiments with many agents, to produce local anæsthesia of the larynx, concludes as follows: 1st, it is seldom that complete anæsthesia can be obtained; 2nd, the attempts made to produce it are attended by great risks of grave constitutional effects or serious local inflammation; 3rd, these dangers and complications differ according to the substances employed; very great danger of poisoning if anodynes as morphia, etc., be used, or of laryngitis if local irritants as chloroform, etc., be employed. He commends, instead of attempting local anæsthesia, the observance of the following rules in operating upon the larynx: 1st, trouble the patient as little as possible with preliminary manœuvers; 2nd, calculate accurately the curve to be given to the instrument, so as to arrive quickly and surely at the site of operation; 3rd, assure the patient that the instrument will not cause suffocation; 4th, introduce the instrument surely, gently and without hesitation to the spot to be operated; 5th, have an exact idea of each individual case, that the operation may be done with the greatest rapidity. Those who have seen much of laryngeal surgery will readily be guided by those simple rules rather than incur the risk of poisoning, laryngitis or we may add of suffocative dyspnœa. If the operator fully understands the case and has the confidence of the patient, he will not need anæsthesia; if he is unfortunate in these conditions, anæsthesia of the larynx will not help him but rather adds to the danger of the procedure.

4. According to the well known experiments of Longet, Volkmann and Schiff, when the medulla oblongata is divided along the median line, the respiration remains regular and quiet. It has therefore been concluded that there are two respiratory centers in the medulla, each of which stands in connection with the corresponding side of the body. Longendorff has found that if after removing the muscles of the neck in a rabbit and division of the membrana obturatoria, the head bent forwards and the medulla so exposed as to be divided down the median line, the respiration continues its rythm; but if now the vagus on one side be cut, the respirations on that side become slower while the respiratory moment of the other side is unaffected. This difference in the two sides may continue for many hours. When both vagi are divided this difference is still more marked, and the diaphragm no longer moves regularly. If the central

end of one of the vagi be irritated the respiratory movements of that side are arrested while the other half of the diaphragm continues to move as formerly. It therefore follows that each vagus is in connection with the respiratory center of its own side, and that the latter governs the corresponding half of the diaphragm.

5. Dr. Coghill, in a critical review of the value of the hypophosphites of lime and soda, gives the results of this treatment in 100 indiscriminate cases, where it was fairly tried in the Royal Hospital at Ventor: 37 improved, 17 remained in *statu quo*, 26 got worse, and 4 died. Of 328 patients otherwise treated, 240 improved, 39 remained in *statu quo*, 25 got worse, and 20 died. It seems evident from these statistics that the hypophosphites have no claim to the character or properties of a specific remedy in cases of consumption. Great disappointment resulted from their impotency in checking such characteristics of the disease as night sweats or influencing favorably the febrile conditions of advanced lung mischief. That these salts have however valuable tonic properties, promoting the appetite, digestion and assimilation, especially of fatty food, is admitted.

6. Having given special attention to the subject of syphilitic phthisis, Dr. Schnitzler, of Vienna, is of the opinion that the lung is attacked by syphilis much more frequently than is thought to be the case by many, and that a correct diagnosis can in many instances be arrived at if due care be taken and all the circumstances connected with the case carefully considered. The author details five cases at length and makes these observations: On physical examination the middle and lower lobes are found affected more frequently than the apices. One or both lungs or only a part of a lung may suffer. The diagnosis must be made from a careful consideration of the subjective signs and the changes ascertained by physical examination of the chest, the course of the disease, the influence of treatment, the history and the coincidence of syphilis in other organs. The general symptoms are mostly those common to phthisis and other chest diseases. The course of syphilitic disease is generally slower and the whole organism is less severely affected than in true phthisis. If a patient who has pulmonary mischief be descended from healthy parents and there be no family history of chest disease or

if any sign of syphilis can be found about his body syphilis of the lung becomes probable, and this probability becomes greater if the signs of disease be found chiefly in the middle or lower lobes—the apices being free. The diagnosis is assured if there be syphilitic changes in the larynx. If appropriate treatment be promptly and energetically carried out, recovery may take place, even in cases apparently the most hopeless. The principles of treatment are the same here as in syphilitic disease of other organs. Thirty grains of iodide of potassium may be gradually increased, and mercury is best introduced by inunction. To very anæmic patients iodide of iron may be given. Under the head of Pathological Anatomy the diffused and circumscribed or gummatous forms of lung affection, are fully described. [As somewhat parallel to this extract from Prof. Schnitzler's article (1880) the reporter may be pardoned for adding some propositions founded on the history of four cases which he presented to the Missouri Medical Association three years ago (Syphilitic Phthisis, Mo. Trans., 1877.) "Syphilis in the tertiary stage may produce in the lung conditions closely allied to phthisis." The diagnosis must depend in a great measure upon the history. There can be but little difference between the physical signs of this and that of ordinary tubercular disease. It may be safe to suspect syphilitic phthisis when the physical symptoms point to slowly progressing disease in the middle and lower part of the lung—the apices being free in cases where there is a decided history of syphilis. The suspicion may be confirmed if when specific treatment is adopted improvement takes place. One lung may be more affected than the other. Recovery is much more probable in a case of this kind than when there is an equal amount of tubercular injury. The treatment should be iodide of potassium in from ten to twenty grain doses thrice daily, and inunctions of mercurial ointment. Tonic treatment is important in many instances. Among the cases given were illustrations of fibrous (diffused) deposit and of gummata. Many points of resemblance, and the review of each in the *London Medical Record* (1877 and 1880) make the dates of publication a matter of some interest!!]

7. The editors and publishers of the *Archives of Laryngology* deserve the thanks and support of every student of diseases of the throat. A handsome and most valuable quarterly journal is now within the reach of all, and from the promise of the

first issue, it will be sought for, not only by the specialist, but by the intelligent general practitioner also. Among many original contributions, we note "Microscopical Study of Papilloma of the Larynx," by Dr. Elsberg; "Operations in the Pharyngo-Nasal Space," by Dr. Voltolini, of Breslau; "Minute Anatomy of the Larynx," by Dr. Seiler; "Extirpation of the Larynx" (this the first in America), by Frederick Lange, M. D., and "Cysts of the Vocal Bands," by Dr. Heinze, of Leipsig. The articles of the second member are Cohen, Gerhardt, Gerster, Heinze, Seiler, Ingals and Porter. A large collection of clinical notes adds much of practical importance. Want of space forbids a lengthy review, but we are sure it will many times return the modest subscription of three dollars per annum. Dr. Elsberg is the editor, assisted by Drs. Cohen, Lefferts, Knight, Mackenzie (London), Oertel (Munich), Krishaber (Paris), and others. Messrs. Putnam's Sons are the publishers.

In addition, we commend to those especially interested in the literature of Laryngology, the elaborate reports of Lefferts (*N. Y. Medical Journal*), of Knight (*Boston Medical and Surgical Journal*), of Walsham (*London Medical Record*), and the proceedings of the Laryngological Association as published in the ST. LOUIS MEDICAL AND SURGICAL JOURNAL.

8. By the favor of the author we are in possession of an advance copy of his long looked for work on "Diseases of the Throat and Nose." This is the most valuable as well as the most extensive contribution which the distinguished author has yet made to medical literature, and is itself a witness to the years of labor which he has bestowed on it. It is worthy of him and we can add no higher encomium. A review will be given at an early date. Messrs. J. & A. Churchill are the English publishers; an American edition will appear in about two months, by Prestly Blakiston, Philadelphia.

Editorial.

NEW JOURNALS.

The St. Joseph Medical and Surgical Reporter, No. 1 Vol. I., is on our table, J. P. Chesney, M. D., editor. This is a monthly periodical that is to be devoted to the interests of Western medicine. It contains twenty-eight pages of reading matter. Price, $2.00 per annum. Its four original articles by Drs. Bryant Simmons, J. W. Heddens and Geiger, are quite interesting.

The sentiments expressed by a correspondent with respect to medical education is consonant to facts; he says that, "We have nothing disrespectful to say or think of the East, but we advocate Western enterprise, Western development, Western educated physicians; we believe that Western educated men, better than others, can apply the facts and principles of their local conditions and can understand and more successfully treat the diseases of their climate." Again he says: "Why send men to Paris, London or Berlin, to make Missouri, Kansas or Iowa doctors of them?" The men that come here from either of the three places are not successful in their practice until they have learned from experience—frequently sad for their patients—the peculiarities of this Western country. How is it possible to learn from hospitals that have none but poor, half starved peasants for patients, whose minds are depressed—which has a marked effect on disease—whose food is totally different from ours, and whose mode of living is entirely unlike any class that we have. Medical students may learn the mechanical part of medicine in such places, but this does not make them physicians.

The article in the department of "The Pen," we are sorry to say, is far too bitter to have the effect that the writer desires.

We wish Brother Chesney and his neat *Reporter* success.

No. 2, Vol. I., of the *Peoria Medical Monthly*, a journal devoted to medicine and surgery, edited by Drs. John Murphy, J. L. Hamilton and H. Steele, at $1.00 per annum, Thomas M. M'Ilvaine, A. M., Publisher, Peoria, Ill., is on our exchange table. It contains twenty-two pages reading matter, and contains quite a number of instructive original contributions. The physicians of Peoria and vicinity will no doubt support their *Monthly*. Very

few physicians know that it is more to their own benefit to support and contribute to a journal than is their support and contributions beneficial to the journal.

Before the *Chicago Medical Gazette* reached its first half year it assumed another name. Why? Is *Review* a better name?

No. 3 of the *Alienist and Neurologist* is before us. We learn from Dr. Hughes, its editor, that its success is beyond question. We are pleased to know this for two reasons. One, the profession need such a journal; another, we know of no man that can better conduct a periodical of this character, than its present management.

New Instruments.

SYRINGE POINT FOR REMOVING CERUMEN AND FOREIGN BODIES FROM THE EAR. By THOS. F. RUMBOLD, M. D.

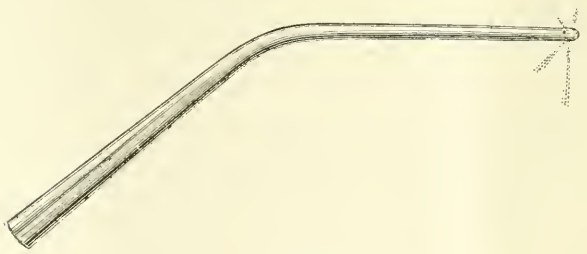

Fig. 3.

The orifices of this syringe are situated around its side, and are so formed that they throw the stream laterally and a little backward. The instrument is made quite slender, so that by gentle manipulation it can be passed over the top of the inspissated cerumen, there being here almost always an unoccupied space. Once the point is placed behind the mass, the water may be driven through the instrument with fully twice the force that could be borne from the usual ear syringe. The merit of this syringe is that the stream does not strike the membrana tympani, as is always done by the usual ear syringes, while freeing the auditory canal of hardened ear wax.

I have found it quite useful in removing foreign bodies from the auditory meatus, provided that the point may be passed in behind the object.

Books and Pamphlets Received.

Contributions to Orthopedic Surgery, including observations on the treatment of chronic inflammation of the hip, knee, and ankle joints, by a new and simple method of extension, the physiological method; and lectures on club-foot, delivered at the College of Physicians and Surgeons, New York (special course). By Jos. C. Hutchinson, M. D., Visiting Surgeon to the Brooklyn (N. Y.) City Hospital, etc. 12 mo. pp. 121—1880.

The San Francisco *Chronicle* and its history. The story of its foundation, the struggles of its early life, its well-earned successes. The new *Chronical* building, the edifice and machinery described, comments of the press. 8 vo. pp. 60. 1879.

Forty-fourth annual announcement of the Medical Department, and the thirty-fifth of the Law Department of the University of Louisville—session of 1880–81.

The Winchester Observatory of Yale College. Circular of the Horological and Thermometrical Bureaus, published by the Observatory Board of Managers for the information of persons interested in these public services, second edition, New Haven, Conn., June, 1880.

Translations of the Medical Society of the State of Tennessee, at its forty-seventh annual meeting, 1880.

The Histology of the blood vessels. By Edmund C. Wendt, M. D., of New York. [Reprinted from the New York *Medical Journal*, July, 1880.]

The Irritable Bladder in the Female. By L. S. Oppenheimer, M. D. [Reprint from the Louisville *Medical News*, June 12, 1880.

The Therapeutic Value of the Iodide of Ethyl. By Robert M. Lawrence, M. D., Boston. [From the New York *Medical Record*, June 19, 1880.

Second Annual Announcement of the College of Physicians and Surgeons of St. Joseph, Mo.

Art. X.— Reflex Cardiac Gangliopathy with Hereditary Diathesis. By C. H. Hughes, M. D.

Annual Announcement of the St. Paul Medical College; Medical Department of Hamline University, of Minn.

Notes on the Anatomical relations of Uterine Structures, with surgical remarks and therapeutical suggestions. By T. H. Buckler, M. D., of Baltimore, Md. [Reprinted from the Boston *Medical and Surgical Journal.*

Salivation in the Insane. By Edward W. Saunders, M. D., of St. Louis. [Reprint from the *Alienist and Neurologist*, April, 1880.

Salicylate of Sodium in the Treatment of Iritis. By Julian J. Chisolm, M. D., of Baltimore.

Medical School of the Missouri University, at Columbia, Mo. From the Report of 1879-80.

The Medico-legal Aspect of Cerebral Localization and Aphasia. By C. H. Hughes, M. D. [Reprint from the *Alienist and Neurologist*, July, 1880.

On Fluid Extracts as proposed for the coming Pharmacopœia. [Reprint from *Therapeutic Gazette*, April 15th, 1880.

Ovarian Tumors. At what stage of the disease is it the proper time to operate? By Edward Borck, M. D. [Reprint from the Cincinnati *Obstetric Gazette*, March, 1880.

A case of Compound Dislocation of the Wrist. Reported to the St. Louis Medical Society. By Edward Borck, M. D. [Reprint from the transactions.]

On Division of the Sphincter Ani Muscle as a Therapeutic Measure. By Charles B. Kelsey, M. D. [Reprinted from the New York *Medical Journal*, June, 1880.

The American Medical College Association, fourth annual meeting, held at New York City, May 31st, and June 1st, 1880.

Twelfth Annual Report of the New York Orthopædic Dispensary and Hospitals (for children with spine and hip diseases). 1880.

The Anatomy and Pathology of two Important Glands of the Female Urethra. By Alex. J. C. Skene, M. D., (with lithographic plate). [Reprinted from the *American Journal of Obstetrics and Diseases of Women and Children*, Vol. XIII., No. II., April, 1880.

Investigation of the Albany Medical College. Report of the Special Committee of the Common Council of the City of Albany, on the affairs of the Albany Medical College and the removal of Dr. John Swinburne.

On the Relations of the Medical Profession to the Trade Interests of the Materia Medica, and a note on Pepsin. By Edward R. Squibb, M. D., of Brooklyn, followed by a reprint of a paper entitled, A Ready Method of Testing Pepsin, re-published from "The Proceedings of the Medical Society of the County of Kings," for May, 1880.

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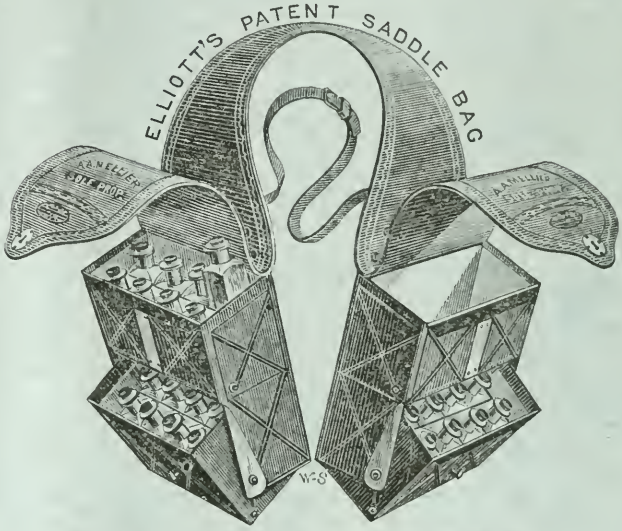

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Jamaica Dogwood. (PISCIDIA ERYTHRINA.) The reports which have already been received of the effects of this drug more than justify our action in placing it before the profession of this country. Making due allowance for the enthusiasm which its action has aroused, we would only say, that whereas, we a short time since merely asked the profession to submit it to a trial, we are now justified in recommending it as a substitute for opium in many painful affections. Its advantages over opium lie in its not constipating or locking up the secretions, and in its leaving none of the unpleasent constitutional effects associated with the administration of opium.

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